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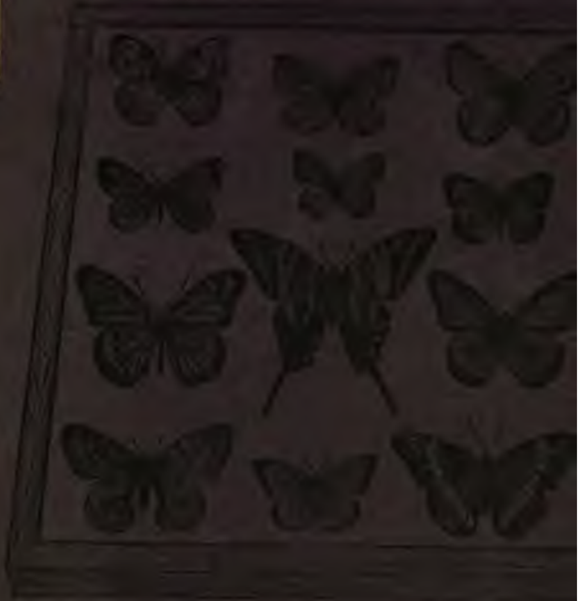
FOR COLLECTIN

VALUABLE



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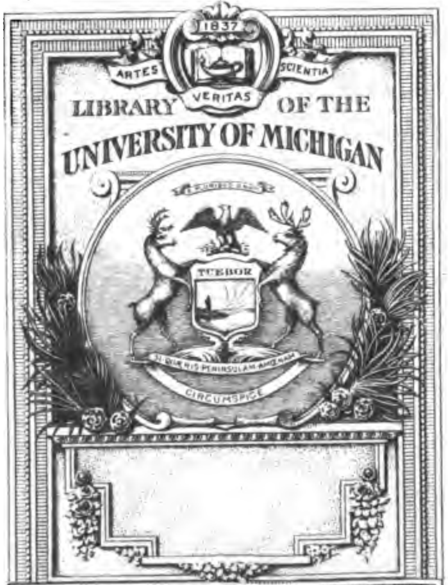

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Sue Bietl

# INSTRUCTIONS
FOR
# Collecting and Preserving VALUABLE LEPIDOPTERA
For Scientific Purposes

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By
*James Sinclair*
*Los Angeles, Cal.*

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## INTRODUCT

In preparing these instruction plain, simple language, avoiding ever possible, for the reason that nature lovers, who are those usı work, are not largely book-learne ity of language will not be obje learned, and will be helpful to tl these advantages.

The subject matter herein cont scientific, and not to be classed value by a work of fiction or thoughtless people are apt to do. tific work of any kind is always a novel or a hammock magazine.

The study of entomology is one ing of occupations, as well as a pı who love the big outdoors and tl inanimate things of nature.

Flowers and plants, the flora o ing, but how much more there is t and observation in creatures of lif

Our boys and girls, young mer older ones during our playtime h much more wholesome, healthful, tional enjoyment out in the fields the different manifestations of insect life than in vacation enjoyments.

has come to be a serious sort of joke, the return of acationer, tired of doing nothing, his or her vaca- time wasted or worse than wasted, and all the at anticipations come to nought.

such experience awaits the one who goes forth a tangible object in view. If a real nature lover, im take his net and other equipment, his instruc- s and books, and have for his object the study of mology and the collection of specimens. He will profitable pleasure in every moment. His work will oth rest and recreation, bringing health while his d stores knowledge, and, not unlikely, he will re- e a substantial reward of a pecuniary nature ugh the sale of rare and unusual specimens which nay collect.

must be remembered that there are not only rare imens, but rare specimens of common families. re are "sports" among insects. An insect of a com- family which bears unusual markings in color or n. These also are valuable.

cientific writers on entomology often find their hings brought to nought by the discovery of col- s of rare insects where, according to the books, they e no right to be. It is of record that specimens of butterflies unknown outside certain sections of South America, have been found flying in numbers in the streets of Pittsburg, Pa. This is only one instance. There are many. Let no supposed scientific authority persuade you that rare or unusual varieties are not to be found in your vicinity. No one knows what is or is not there. The most they know is by meagre reports what has been found there in the past. And, more, many of the scientists who hold government positions are little informed concerning any but the destructive types of insects. Then too, there is the type of political job holder who resents any apparent encroachment upon what he considers his preserves by the layman or the amateur. He seems to desire to make a close corporation of his particular branch of science, and as some doctors resent any display of medical knowledge on the part of patients, so he resents any effort to instruct the public along the lines of his specialty. These types of entomologists will seek to discourage any effort on the part of students to take up this work in any effective way.

We have too, the type of scientist who looks upon his particular branch of learning as some holy thing, which is elevated above the sordid level of money making, "commercialization." He objects to any effort to make money out of his science. We cannot help but respect

Sue Beltham
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10-1-1923

this type of man for his honest, if mistaken, love for his profession. His position is not logical, and we will reprint in answer to it an extract from a published letter by Miss McGlashan, at one time editor of The Butterfly Farmer, a letter she published in answer to a criticism of just this kind from a scientist of note. The extract follows:

> I wish you had been more explicit in stating your objection to "commercializing science." Has there ever been a time when collectors did not receive money for specimens? Do not many scientists have to accept positions because of the salary? Is it not true that four-fifths of the entomologists of America are selling their talents in State Insectaries, in the employ of the Government as Curators of Museums, as assitants to those owning great collections, in order to get bread and butter? Do not the teachers and professors in our schools and colleges barter their scientific knowledge for the means of a livelihood? Is the girl who rears butterflies and moths and sells them to get money to pay her board, clothes and tuition on a lower plane than these admittedly great scientists? I am really frank in saying that I do not know where or why a distinction can be drawn. Can you make it plain to me?
>
> I am ready to admit that the individual who begins the study of entomology or of any of the sciences with a purely mercenary motive, with no higher desire than to obtain the money which the business affords, is in no better position than the one who studies law, medicine or any profession or avocation with the thought of earning money with which to support himself and his family, and just as these men sometimes bless mankind because of their energy, enthusiasm and great knowledge in their chosen work, just so it is quite possible that the woman who breeds lepidoptera or collects coleoptera to enable her to make a living, may at last become entranced with the beauties of scientific research and make her mark in the scientific world.

In this connection, let me say th
center of population in Europe, s
and Berlin, numbers among its b
who deal largely in buying and s
They buy from collectors and s
America, comparatively young ye
tle understood and its commercial
known. Few sections of the cou
careful and continuous observatio
"finds" in the way of rarities are
by even the few collectors, mostly
ate here. An instance of this ki
by one of my collectors of a colon
Pergamus, of which not a single sp
tured in the past 40 years accordi
I only mention this one of many
you that any scientist who tells y
rare or valuable, salable, specime
making a statement which has s
false that we can place no confid
specimens are everywhere insects
it only depends upon the collect
detect and capture them.

Another commercial opportunit
work which I wish to call attentio
ing and sale of cases of butterflies.

ractive wall ornament than a case of butterflies? It
vorthy of a place in any person's home, and a ready
e should be found for all offered. The cases can be
chased ready for the insects, if the collector does not
e to make his own, then all he needs to do is to col-
t the butterflies and fill the case.

ne final word to those who doubt the practical, the
ing commercial side of the work. I, myself, am
of positive and incontrovertible that there is money
commercialized entomology. As a collector I earned
ney at it. As a dealer and an employer of col-
tors I am making more. I had no special train-
for the work when I commenced. I learned as I
advising my student collectors to learn, as I went
ng. What I have done others can do. If my own
erience had not proven the feasibility of the plan
ight have doubts. As it is I have none. Any person
ordinary intelligence, with a reasonable amount of
sistence and study, can do as well as I. For the
at majority of people the work will be in the nature
vacation work. At best it is summer work, unless
goes extensively into it and gathers cocoons and
rs insects under artificial conditions, making an all
r business of it. My desire is, however, to secure
lectors who will work spare time collecting for me.
re is no possibility of loss to them in that case. They
will be learning, getting valuable information. Whatever valuable insects they may secure will find a ready market through me at my advertised prices. It offers an opportunity for extra money to those having spare time to devote to it.

Respectfully,

JAS. SINCLAIR.

## LESSON I.

## SPECIAL INSTRUCTIONS

How do you know that this is a butterfly, and this a moth? This is a question very frequently asked by beginners. To give an answer to this question is quite easy, but to try to explain the difference between one family and another is almost impossible, because very few people are acquainted with the technical characters used in family classification, so an explanation of them would be incomprehensible. An experienced collector can tell almost at a glance to which group or even genus to which a species belongs, but this knowledge has come to him through years of collecting and free use of literature on the subject, and it is impossible to impart this intuitive knowledge.

I do not consider it necessary to review all the different characters used in family classification, as most beginners do not have the patience to go so deeply into the subject. Of course such a classification is absolutely necessary to refer with certainty unusual or aberrant forms, and those who desire to become familiar with all the technicalities must refer to the writings of others.

For these instructions I have selected specimens which are of medium, or large size, and they are colored and marked in such a way that you will have no difficulty in recognizing any of them, after studying the Cuts and descriptions given herein. For the illustrations I have selected species which are splendid representatives of the families or genera to which they belong. Therefore it is unnecessary to give an illustration of each one of the same genera, because all of them are similar in structural respects: the only difference being in the style of markings on the wings and colors: these peculiarities are more readily understood from a brief description of them, as it is impossible to show the colors in a CUT.

To be able to thoroughly understand my descriptions, it is necessary to have a knowledge of the names given to different parts of the wings, etc. An understanding of these names may be had by studying the figures given herein. Fig. 1 shows the forewing and hindwing of a butterfly, also th
which are of different shapes. I
wing and hindwing of a moth, an
antennae (feelers) usually found
ilies. The same method of non
describing the margins and parts
as in butterflies. By comparing
butterflies and moths, you will n
terflies are either enlarged or clu
those of the moths are simple (th
pectinate (feather shaped). Ther
tell a butterfly from a moth by
CLUBBED ANTENNAE (FEEL
fact that butterflies only fly duri
majority of moths fly at night.

Read my instructions on prep
and be sure to send me no dam
loss of an antennae, or a torn wi
unfit for sale. All specimens mu
triangular envelopes with the
OVER THE BACK. Also I mus
only the species ordered on my pr
I give CUTS and DESCRIPTION
and also common butterflies and n
tions. The common ones have b
they will not confuse you in d

re a valuable one or not. Each species has some uliarity by which it can be easily determined, so will find under each one a description pointing these peculiarities. If you find a specimen not menned in these instructions you should lay it aside until learn the names of all the species in your locality. lland's Butterfly Book and Moth Book are the best this purpose and a full description of them will found herein. Do not send any samples or unnamed terial, as it takes too much time to look over such cimens. Write the name, date and locality on each le triangular envelope, because if I had to do all for you, my time alone would swallow up all posle profit. Be sure to give the proper name to each . The instructions and CUTS show and describe h species in such a way that you cannot possibly ke a mistake. Use a CIGAR BOX or any other ng WOODEN box for shipping. Absolutely never ny case use a paper box of any kind, or they will er reach me in perfect condition. Never under any umstances use a TIN box, as the specimens will be ned by mould before reaching me. This is caused the moisture from the specimens not getting a nce to evaporate. Therefore you can see that ODEN BOXES must be used, and absolutely no ers. I pay promptly for all specimens properly named and prepared, but as it takes a little time to examine large shipments or when I receive hundreds of packages, I must ask that you give me plenty of time to make a report, which will sometimes take two or three weeks. Many people send in shipments without any address, sometimes only a name and no address, and when these people fail to receive a report, they sit down and write me a red-hot letter, calling me a thief, scoundrel, etc. Then again many will send in specimens improperly named and when I call their attention to the fact they immediately write and call me all kinds of names. I also receive shipments of material not packed properly, and as a result they reach me in damaged condition. All this misunderstanding can be eliminated by reading the instructions carefully; writing the name and complete address on the package; sending in material in perfect condition, and by sending in ONLY those wanted, and no samples or unnamed specimens. It is just as simple and easy to do the work properly, as not, and if you do this you can depend on a square deal every time; also all the encouragement I can give you. All packages will receive my personal attention, and whenever I find any specimens improperly prepared, or not named correctly, I will at once report the matter to you, and advise you to send postage for its return. I do this to convince you that I wish to do the right thing, and am not holding any specimens back on you. However, I must again call your attention to the fact that during my season I am a very busy man, so cannot in any case undertake to examine unnamed specimens or samples, because my time is too fully taken up examining packages from collectors who do the work properly and who send in just the ones I want. Study the **CUTS** and **DESCRIPTIONS** very carefully before writing the name on the envelope, and you will never make any mistakes, because they are so simple that any one can understand. By following my rules and only sending in the specimens of which I give **CUTS AND DESCRIPTIONS** and price in these instructions, you will be sure to make a success, and can depend on prompt payment from me. Trusting to receive some of the specimens wanted, and wishing you success, I am,

Sincerely yours,

J. SINCLAIR.

## LESSON II.

## IMPORTANT RULES

No. 1. **READ CAREFULLY.**—Kindly read the instructions **THOROUGHLY**, as I have explained every possible question that I think may arise in your mind, so as to stop all unnecessary c
a very busy man every **SPRING**
and my time is fully taken up
ing on shipments of specimens
some point that puzzles you an
you to write to me, enclosing a
velope for return to you, so as t
Kindly remember that I do not

No. 2. **GIVE ME TIME**
**AGES.**—Remember that it take
ages of specimens put up in env
I am receiving hundreds of th
expect a report at once. A pac
days longer to reach me than a
first class mail. In view of the
me plenty of time, and no less
weeks after the packages rea
time, so as to be sure that the
properly, and to give my collect

No. 3. **MATERIAL IMPR**
**OR INCORRECTLY NAMED.**–
package is not satisfactory to m
it to the person sending it, as
thing by all my collectors, and
think that I am holding back a
Of course in such cases all per

returned will have to pay the postage, as my mail
ry large, so my postage bill is considerable.

o. 4. **USE WOODEN BOXES ONLY.**—Absolutely
r ship specimens in **PAPER BOXES**, no matter if
e is only one specimen to send, as such packages
r reach me in perfect condition. Also never in any
ship them in **TIN BOXES**, because when fresh
imens are shut up in them, the moisture does not
orate, and at once causes mould, which completely
s them for my use. Therefore use **WOODEN**
**ES** for shipping, and no others.

o. 5. **SEND ONLY THOSE SHOWN IN THESE**
**TRUCTIONS, IF ON MY LIST.**—**NEVER** in any
send specimens not **ORDERED**. **MY** price list
vs exactly what I am buying at the present time,
here is absolutely no reason for any misunder-
ding on this point. If you are not sure of the
e or cannot name a specimen, do not send it to me,
am far too busy to do any naming of specimens
nyone. You will find **CUTS** and **DESCRIPTIONS**
**NE HUNDRED DIFFERENT SPECIES** of butter-
and moths shown in these instructions, most of
h I buy. The majority of them are valuable, and
**CUTS** and **DESCRIPTIONS** show just what they
like; so when comparing your specimens with them, be sure that they are exactly the same in size, color, and markings.

No. 6. **SEND THOSE ON MY PRICE LIST.**—Before sending any specimens be sure that they are the species wanted, because there are a number of them that I am not buying at present. Therefore look up the large price list at the end of these instructions, and you will see exactly what I buy, and the prices I pay. When you have earned some money from the sale of your specimens I would advise you to become familiar with all the other species on my price list that I am buying. This can be done in most cases with Dr. W. J. Holland's Colored Plates, which I fully describe at the end of these instructions. All specimens that you cannot name or those not shown in these instructions should be stored away until such time as you can learn all the names. Do not send them to me unnamed, as my time spent in naming specimens would swallow up all possible profit; anyway I have no time to do so, even if I wanted to, ever so much.

No. 7. **SPECIMENS THAT ARE NAMED INCORRECTLY.**—Be absolutely certain that you put the correct name on the envelope, and never write the name until you have carefully compared your specimens with the **CUTS** and Descriptions given herein. If they do not answer the descriptions in every detail, or are not exactly the same in size, shape and markings as the CUTS, you can be satisfied that it is not one of them. Last season I received scores of packages containing specimens named incorrectly. Some persons would send Papilio asterias, named P. pergamus, or P. indra, etc., although the **CUTS** and **DESCRIPTIONS** show wherein they differ so plainly, and yet when I would point out the mistake, many of the persons who sent them would sit down and write me a letter in which they were quite free with their criticism, and would insist that they named them correctly. Now I do not wish any misunderstanding of this nature whatsoever, and as for advising a collector that his specimens are not named correctly, if they are, is out of the question, as I always do my utmost to encourage a collector who sends me valuable specimens, because it is to my own advantage to do so if nothing else, because it is only after receiving several shipments every season from each collector that I can ever expect to receive any large remuneration.

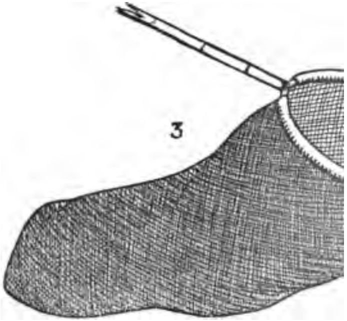
**NOTICE.**—By strictly adhering to my rules and sending in material that is perfect, named correctly and packed in a wooden box, there can be absolutely no misunderstanding or any need for unnecessary correspondence, and by so doing you will be giving me more time to devote to examining your packages promptly.

## LESSON III.

## EQUIPMENT NEE

The few things needed can be ma
little trouble and practicaliy no exp
and explain in clear terms exactly
You will need a net, killing jar, tr
a few empty cigar boxes for shippin
of forceps for picking up the specin

**NET** (See **CUT**, Fig. 3)—Which
should be constructed. Any kind



the bag is made about two feet lo

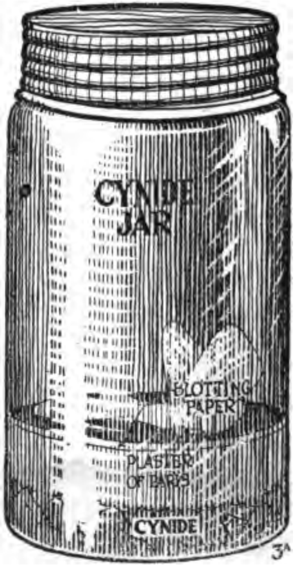
about one foot in diameter and to this ring attach a bag about two feet in depth, made of tarlatan or very fine bobinlink, with the corners rounded off, forming the shape of the letter "U." Nets can be bought which are made so that they can be folded up, for traveling.

**HOW TO USE THE NET.**—Place the net over the butterfly while it is hovering over flowers, or capture them as they fly past you, by sweeping them into the net. The net must be long enough so that it can be closed when hanging over the ring on either side. After the specimen is imprisoned lay the net on the ground and with the fingers take hold of the bottom of the net and lift upward, so as to induce the specimen to fly upwards, as it invariably will, then all that must be done is to introduce your killing jar under the ring and up into the net, placing the open mouth of the jar over the insect without ever touching the upper side of it with the fingers.

**METHODS OF KILLING.**—The cyanide jar, chloroform, gasoline, ammonia, carbonate of ammonia.

**CYANIDE JAR.**—Of all the methods of killing the cyanide jar is the handiest method of all, and is painless to the insect as well as speedy, for in less than a minute it is stupified and rendered motionless. If taken out within ten minutes, however, it will revive, so therefore it must be left in the jar for about fifteen minutes. Cyanide of potassium can be obtained from any druggist, or from me. See under Supplies.

**HOW TO MAKE CYANIDE JAR.**—See Fig. 3-A. Take an ordinary fruit jar with a wide mouth and a screw top, which is of convenient size. Into this bottle put from an ounce to an ounce and a half of pure cyanide of potassium, in lumps (a deadly poison), and completely cover this with a layer of plaster of Paris, mixed to the consistency of paste. As the plaster is



setting, a piece of blotting paper or wool should be inserted in the bottle, to absorb any moisture. In a day or so the plaster will be dry and ready for use. Remove the old blotting paper, and put a piece, cut to fit, into the bottle from time to time, to absorb all moisture and to keep the specimens clean and dry. It must be borne in mind that cyanide of potassium is one of the most deadly poisons known, and should be handled with the greatest care.

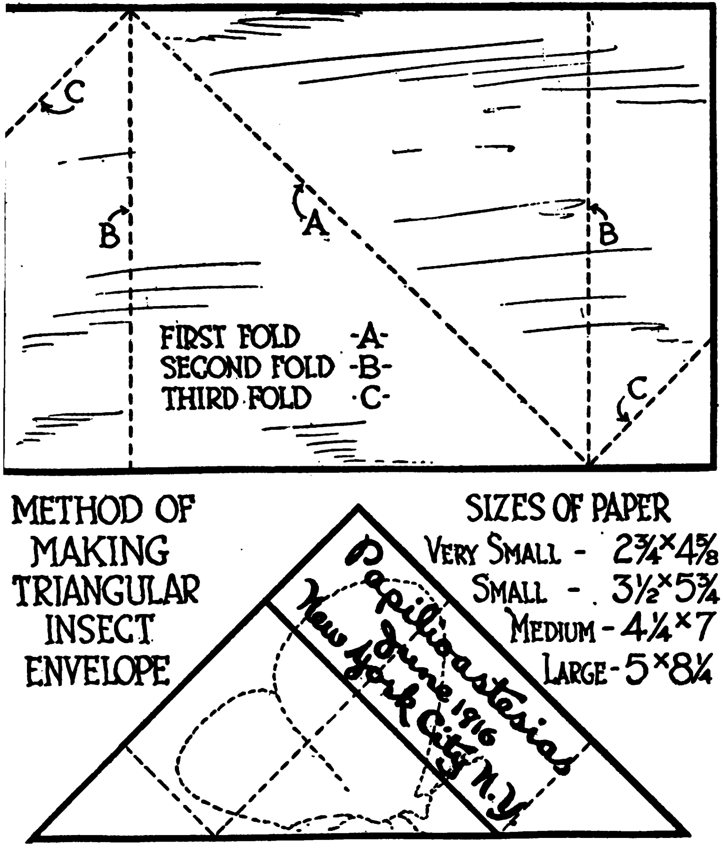
**GASOLINE** is recommended to persons who have difficulty in procuring cyanide from their druggist. To kill an insect with gasoline all that must be done is to pour a few drops on its head and body through the meshes of the net without taking the specimen out. This will kill it at once, but it will revive if the fumes are allowed to evaporate, so to prevent this, you must put the specimen in a triangular envelope at once, and place in your collection box.

**AMMONIA.**—To kill a specimen with ammonia, it is best to saturate a little cotton wool with the liquid and place in a jar, renewing from a small vial carried in the pocket, so as to replenish frequently. Never use ammonia on specimens with green colors or it will bleach them.

**CARBONATE OF AMMO**
fect killer, but must not be
green colors or it will bleach
may be secured in the botto
in any convenient way.

**HOW TO INCREASE TH**
**CYANIDE JAR.**—Tartaric A
to decompose, and this will
strength of the poison fumes
cyanide any desired streng
cyanide and blotting paper.
used to advantage when u
poison labels on each jar, bu
to the collector, but they sh
result may be a violent heada

**HOW TO USE KILLING J**
imprisoned in the upper end
be introduced under the ring
open mouth of it placed ov
specimen clings to the net, j
side with the fingers, and it
Before taking the jar out of
until the insect is stupefied, s
mouth of the jar from the ou
the cover on temporarily, and



METHOD OF MAKING TRIANGULAR INSECT ENVELOPE

SIZES OF PAPER
VERY SMALL - 2¾×4⅝
SMALL - 3½×5¾
MEDIUM - 4¼×7
LARGE - 5×8¼

MAKE SAMPLE OF EACH SIZE AND USE FOR REFERENCE
4A

jar can be taken out and the top screwed on. In fifteen minutes it will be dead. It is a good plan, however, to examine the specimen to see if it has damaged its plumage in the net or torn a wing. If so liberate it from the jar within fifteen minutes and it will revive, as it will be of no value as a specimen. Of course if it is a female, and you desire to use it for the getting of eggs, you can place it in a paper box which you should carry with you on all collecting trips for this purpose.

**TRIANGULAR ENVELOPES.**—The CUT, Fig. 4-A, shows exactly how to make these envelopes. They must be made of various sizes, according to the size of the specimen, but always make them much larger than the specimens to be placed in them, so as to give the specimens a chance to dry properly. Soft paper MUST BE USED and must not be heavy. Medium weight soft writing paper will make splendid envelopes. To make one is quite simple, all that must be done is to cut a piece of paper of oblong shape, and fold into a triangle, then fold over the protruding ends and finally the corners and it is made.

**THE USE OF THE TRIANGULAR ENVELOPES.**—They are used for holding specimens until they are ready for mounting, and it is impossible to ship fragile specimens in any other way. The specimens are placed in these envelopes immediately after it is killed, but before doing so the name, date and locality should be written on the envelope, and great care must be taken to see that the wings are FOLDED UP OVER the back so as to protect the scales on the upperside of the wings. The CUT shows how all this is done.

**COLLECTING BOX.**—A cigar box will make a splendid collecting box. It should contain several layers of some kind of heavy cloth, such as velvet, sprinkled with naphtalene flakes. When a specimen is captured and placed in an envelope, it should be placed between one of the layers, in the bottom of the box. Build the specimens in the box, one layer at a time, and then when you return from your collecting trip you can take the specimens out and store them in cigar boxes, or if they are valuable ones pack and ship them, with the name, date and locality written on the envelope. Never put more than one insect in a killing jar. It is best to have two jars when collecting, as then you can use one for killing and the other for merely stupifying the insect. As soon as the insect is really dead place it in an envelope and store in your collecting box until you return from the trip.

**CIGAR BOXES FOR SHIP**
splendid receptacles for ship
in triangular envelopes. A
them to you, just for the tro
Lay in a stock as soon as y
be fixed, however, and mus
nailed just under the lid o
This must be done so as to
crushed in on the specimens.
to me that did not have the
lids, arrived with the lids b
this precaution.

**FORCEPS.**—It is impossib
without a pair of forceps for
The fingers must never tou
wings, or the scales (dust) w
ceps must be used in picking
folding the wings up over th
of the specimens with the for
side of the body near the ba
can be bought at any dealer i
you a pair all prepaid for onl

## LESSON IV.

**METHODS OF ATTRACTING AND COLLECTING.**—Butterflies fly only during the day and must be captured with the net. They are all fond of flowers and will be found wherever they abound.

**HAUNTS.**—No place must be overlooked in searching for butterflies and moths. Some prefer sandy lanes and woods, others high mountains, some in the low lying valleys, others the sea coast and many other places. Certain species are so local that they are only found in single spots in North America. Take, for example, the little blue butterfly named Lycaena xerses, which is only found in Lone Mount Cemetery, in San Francisco. There are many others which are only found in certain spots in the United States.

**HIGH FLYING BUTTERFLIES.** — Occasionally these may be induced to come within reach of the net by throwing a stone up into the air in front of the insect, as it will invariably follow it to the ground.

**BUTTERFLIES WITH DEGRADED TASTES.**—Some butterflies have very degraded tastes, and the recognized bait for them is a dead animal of some sort in a state of ''Highness'' or other excremental matter.

**MUD HOLES.**—On very warm days it is a common sight to see swarms of butterflies hovering over damp places on the roads or mud holes, so if there are no such places on the roads in your locality, it will be well to make them by pouring water at different places on very warm and sheltered roads where the sunshine will reach it.

**SAP FROM TREES.**—Many butterflies are attracted by the sweet exudations from various trees or over ripe fruit which has fallen to the ground. Bean fields and clover fields are excellent collecting grounds.

**COLLECTING ON CLOUDY OR WINDY DAYS.**—The little blue butterflies (Lycaena) will be found on such days resting on the grasses. The Hairstreaks (Thecla) will be found hidden higher up among the leaves, and must be forced out into the open by beating the branches with a stick.

**COLLECTING MOTHS.**—Moths only fly at night, at least the great majority of them, but there are a few valuable ones that can be taken during the day in the same way as butterflies.

**APPLE BLOSSOMS AND IVY BLOOMS.**—In the dusk of evening the Hawkmoths will be seen darting through the air like little Humming birds, especially wherever there are apple blossoms, ivy blooms, honeysuckle, etc. By taking your stand in the dusk of evening near any of these, with net in hand, you will be certain to capture some fine Hawkmoths, and when it gets too dark to see the specimens, use a lantern to examine the blossoms.

**REGARDING LIGHT.**—Light has a great attraction for moths, and many of our rarest and most desirable species are attracted by light. There are many methods of using it, all of which yield a certain percentage of moths, if systematically employed. On warm, sultry nights, myriads of moths will come to the light most noticeable. Placing a lamp near an open window will quickly attract some moths, and electric lights are also favorable localities for the successful collector if they are not far from the ground, so that he can be within easy reach of them. If a new electric light establishment has been installed near your neighborhood, you will be certain of some rare catches and specimens, but after they have been installed for a few years most of the moths and insects in the vicinity will have become extinct, by reason of beating themselves to death against the lights.

To capture moths with the aid of a lamp made similar to a street lamp is one of the best methods used. Make a frame 15 inches high, 10 inches square, with glass on all sides, except the door, which should be lined with some bright tin, to act as a reflector. The top should be of wood. Attach to this lamp a stick long enough to raise it to a di
A telescopic pole is excellent
it you can raise the lamp to
side this case attach one or t
to complete the attraction. T
in open parts of the woods,
the most profitable place to
light. To use this lamp, all y
in the shadow of the tin do
they emerge into the light. I
a white surface, many insect
will see. White sheets, or clot
often attract many moths.

**MOTH TRAPS.**—Many val
captured by using lights and
no special care, all that mus
at night and in the mornin
catch. The trap should be
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greatest success. One collec
has had very satisfactory re
trap in his cabbage patch.

The CUT Fig. 4 shows h
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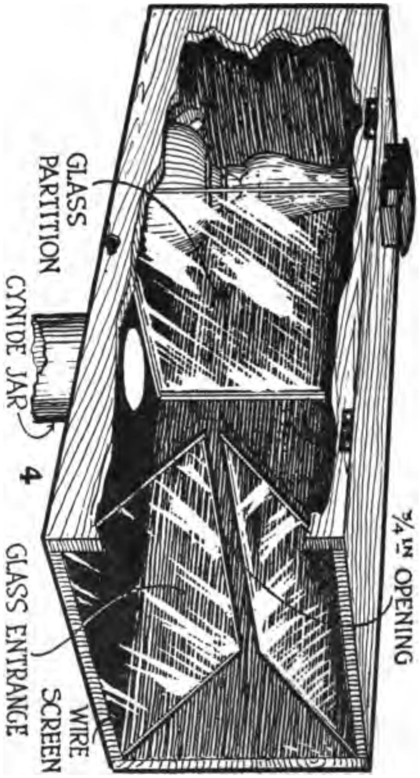
width and heighth. You ca

or you can make the front by using two pieces of wire or panes of glass, inclining inwardly, and stretching from side to side. The panes or wire should be separated by a space of one-half inch or so. The moths will be attracted by the light in the trap and will fly toward it, but will first have to crawl up the inclined panes of glass or the funnel and enter the trap through the inlet. Once in the trap it will be imprisoned and it cannot reach the lamp because of the glass partition between the lamp and the moth chamber. Just in front of the glass partition a round hole should be bored, in the bottom of the trap, into which must fit the mouth of a cyanide jar. The moths will fly to the partition and finally drop into the open mouthed cyanide jar. The top of the trap can be made flat or with a slanting roof to carry off rain, and it should have an aperture to carry off the smoke and heat from the lamp. The light can be a kerosene or acetylene lamp, with a reflector. One entire side should be a door, as shown in the illustration, so as to place the lamp in the trap and to take the moths out of the chamber. On suitable nights such a trap will capture hundreds of moths, but most of them will be small moths (micros) and occasionally a valuable one.



4

**SUGARING FOR MOTHS.**—The well known nostrum for capturing moths is "sugar." There are a number of formulas for making sugaring mixtures, but the one given below is my favorite:

| | |
|---|---|
| Coarse brown sugar | 4 pounds |
| Syrup (common) | 1 quart |
| Beer (stale) | 1 quart |
| Rum (Jamaica) | 4 ounces |

Mix together the sugar, syrup and beer thoroughly and gradually heat. Boil for only five minutes, stirring constantly. Put up in corked bottles until ready for use, and just before using some of it add the rum.

Honey is often substituted for sugar, and sometimes the whole mixture is unboiled; but if you will try the foregoing recipe, the result of many years' experiments, you will be entirely satisfied with the outcome. Carry a can full of this bait, and a brush to put it on with, to complete the outfit.

The collector may, of course, provide himself with as many "cyanide bottles" as he can conveniently carry, and six will not be too many if the sport is fast. A bull's-eye lantern or an ordinary bicycle lamp may be used in night collecting, but some prefer a Baldwin miner's lamp; however, any kind of a lantern will answer the purpose.

All seasons of the year yi
of moths, which may be captu
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cloudy nights, with a little
best for "sugaring." Many n
to be favorable will be disco
not a moth will make its appe
more attractive flowers will in
July is generally the best m
"sugaring," and what can be
spend a warm night at this a
in the beckoning woods?

The sugar "bait" may be
such as trees, logs, rocks, fe
about the height of your che
strips, preferably on the shel
be done before dusk, as many
colae" (the big, grayish mot
wings banded with black) com
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Sugar as many trees as you
twenty will be sufficient, accor
tween them. You should go o
again, until the moths cease to
enough. If you use six "cy

suggest that you leave three of them at the center of your route. Each time you come to it examine the contents of the others by spreading the moths on a sheet of paper, picking each one up with the forceps (always pick up an insect by the legs, or underside). If it is perfect, put it into one of the three bottles left in the middle of your route. The damaged ones are allowed to go, and if they have not been imprisoned for more than ten minutes they will surely survive. It is a good plan to have the three bottles always left in the center of your route, each reserved for a certain kind, as, for instance, one for the rare and beautiful specimens, one for the very small ones, and of course the others are placed in the remaining bottle. By so doing, the specimens can be carried home with more safety.

If you desire to use the battered old females for breeding purposes, which you no doubt will, put them into pill boxes—or better still, you can take along a supply of paper boxes large enough for them to live in, while laying eggs. The latter procedure saves all the bother of changing them from one box to the other when you arrive home.

Many insects sit very quietly at the sugar, while others have a nasty trick of "dropping" at the least alarm. The cyanide bottle should always be held in the left hand, and the insect gently "flicked" in with a disengaged finger, the cork held in the right hand ready to close the bottle immediately. The lantern is suspended all this time by a ribbon tied around the neck. From dusk to 11 o'clock on a favorable night during the summer months the fun is fast and furious. Thousands of moths of all sorts come and go, myriads of them, and occasionally a "good thing" is captured. The swarming of many species at a certain time, and their mysterious disappearance at another, their places being rapidly taken by others, perhaps of a different genus altogether, which also give way to others, is very interesting to observe. Then probably from about midnight during an hour or so they nearly all vanish, after which time there is usually another rush again until daylight, when, of course, they all disappear, except those which have sipped too freely of the intoxicating mixture. Evidently these greedy little fellows will hang on, sipping, until they drop off "dead drunk" from the tree or bush.

If you wish to bait with "sugar" any particular place where you know it would be objectionable to smear the walls or trees, etc., with this mixture, or if you are at a loss for anything to brush it on, soak some pieces of white cloth for a few hours in the mixture, and pin them upon the tree or wall, taking them down again after using, or you may spread them on the ground in a favorable spot, or any place you may think suitable.

In approaching a tree that has been "sugared," be cautious and careful to make as little noise as possible, as many moths will drop at the least sound or disturbance, and it is probable that some of these moths may be rare, and you would regret the loss. Be sure to keep the mouth of your bottle clean, by using a wet cloth to rub off any sugar that may adhere to it, and then finish by using a dry one.

**SUGARING MIXTURES FOR "DRY TOWNS."**—Beer and rum cannot be obtained in some districts, so I give below some very good substitutes, which have proved satisfactory, but not so good as the beer and rum. Sugar and vinegar mixed together, cider and sugar, common brown sugar mixed with water. Put in as much sugar as the water will dissolve. Limburger cheese has given very good results, as also has honey.

**POISONED SUGARING MIXTURE.**—This mixture will come in handy for those who object to going the rounds of a sugaring route, as it will kill all specimens that partake of it. Any trees smeared with this mixture should have large poison
warn any curious persons f
gether one pint of water, one
soda and one ounce of arseni
with poison labels on them,
or three tablespoonfuls of thi
sugaring mixture you prefe
unless you object to going th
at night, which I explain all

**SUGARING FUNNEL.**—W
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sible, and place the unwired
under the sugar. By jarrin
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using a poisoned bait, such a f
sary, because if the moths w
ants and so forth would dest
necessary, however, to use c
under the poisoned bait, as t

**HIDING LARVAS NEVER PARASITIZED.**—Larvae that hide in the ground under underbrush, etc., are nearly always free from parasites, but those found crawling near the tops of plants during the day are usually parasitized, and when they have been stung they do not seem to bother about hiding any more.

**CAPTURING HIDING CATERPILLARS (LARVAE).**—Many caterpillars after feeding at night on plants, etc., hide in the underbrush on the ground during the day, which makes it difficult and tedious work to find them. The proper time to look for such larvae is on cloudy or rainy days during the season. Another easy way to capture them is to examine the plants for signs of where they have been feeding, and when these are found spread a piece of heavy brown paper near the plants, and next morning you will be sure to find them hiding under the paper.

**SEARCHING FOR THE EGGS.**—The eggs may be searched for on the different trees, plants, flowers, leaves, etc., where the female usually deposits them, and invariably on the underside of a leaf.

**THE LARVAE.**—Many different methods are utilized in collecting larvae, among which are beating, sweeping, searching, and night searching with the aid of an artificial light.

**BEATING.**—This operation is simple but laborious. Armed with an umbrella and a sharp piece of stick, you are ready for business. Open the umbrella, place it on the ground under the branch of a tree, grasp the branch firmly with one hand and beat vigorously with the stick upon the top of the branch. Then examine the contents of the umbrella carefully. In it will usually be found a surprising variety of insect life. A painstaking inspection may reveal something worth preserving. Your finds should be handled gently, as they are easily damaged. Place them in a box and repeat the operation upon other branches. Always be careful turning the contents out of your umbrella, or emptying it too soon, since the shock would kill many delicate larvae, which might be under the rubbish trying to recover their legs. There might be valuable specimens among these which you would recover at the last moment if careful in emptying the umbrella. Under ordinary circumstances you will dislodge few leaves, while your beating upon the branch will cause the larvae to loosen their hold and fall. Larvae usually feed after dark, which is always the most successful time to employ the beating method of capture.

**SWEEPING.**—This method is used to procure the larvae which feed on low growing plants and flowers, which, of course, cannot well be beaten into an umbrella. A bag net must be employed for this. It should be made of strong cheesecloth, about fifteen inches deep and the same in diameter. Fasten this bag to a short handle about six inches long. Sweep from side to side among the flowers, plants, etc. About dusk of evening is a good time for this operation.

## LESSON V.

**SEARCHING.**—This method requires no implements other than the eye and the hand to get the larvae. By a little practice it is astonishing how expert a collector may become at this work. In searching for caterpillars (larvae) I find that shrubs and saplings are better than large trees. Take hold of the smaller branches, turning them up, as I have instructed in regard to looking for eggs, and carefully look down the center of the leaves and on the stalk, where the larvae will usually be found. Many larvae may also be obtained by simply shaking the branches. If these are shaken, not too strongly, the caterpillars will drop off, at the same time suspending themselves by a thread, in which case they can easily be seen. But if this is not done gently, they will drop to the ground, where they will

lie motionless for some time, a
find. There are many larvae
spin two leaves together and f
ing all adjoining leaves, but a
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turn to their original two leave
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Also observe the edges of the le
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square. A very interesting la

demand is the Papaipema species. These larvae bore into the stems of certain plants, lilies, thistles, etc., and their presence can usually be detected by an amount of frass about the base of the plant, for they usually live their whole period of existence in one stem. One may determine a favorable locality at any season of the year by examining last season's stem, the extensive tunnel and the exit hole by which the moth escaped being indications which may be easily detected. Where they have occurred the year before they are sure to be found again. The egg is laid in September, is deposited on a green stem, and lives over the winter. As these species cling to certain places, in more or less localized colonies, it is well to consider where their food plant has been evidently long established, and seek as virgin conditions as you can find. If you are successful in finding these, it is advisable to cut one inch above and one inch below the exit hole, and take the bored section home. Supply yourself with a number of small boxes when you go larvae hunting. Any kind of a secure box will do, but test tubes securely corked are excellent receptacles for caterpillars and eggs. Two or three larvae may be placed in a box, provided they are of the same species; also always keep data in regard to the food plant, and keep each species separate.

**PARASITES.**—Many of the larvae, collected at large, will be found to have been stung by ichneumons Such larvae take longer to feed than the healthy ones do. Some larvae are more subject to the attacks of these horrid pests. Many dozen often emerge from the body of a single unfortunate caterpillar, and I cannot understand how an injured caterpillar can continue to live on under such conditions. To see one of these internal feeders making its exit through the skin of its caterpillar victim is truly a disgusting sight. Certain stung larvae will continue to grow to their full extent, but instead of turning into a pupa, they stretch out at full length. After a day or so the anal end of the body will gradually swell and split, exposing the perfectly formed cocooon of the ichneumon. Nothing is left of the caterpillar but the shrivelled skin. See lesson on Rearing.

**DIGGING.**—To go digging in the fall of the year, when the weather is mild and balmy, for pupae, is another method of procuring insects. The best places for digging are corners where roots meet or shoot from the trunks of trees, also the inner angles of walls, or under isolated trees in meadows, and there are many other favorable places, but all trees out in the open are certain to reveal something—and usually the north side of a tree is best. The tools required are simply a trowel, or anything convenient to carry, and efficacious in scratching up the sod at the roots of the tree, or for tearing off loose bark from the trees which often harbor pupae of certain moths. A box for carrying any pupae you may procure should be filled with damp moss. The pupae should be handled with great care, and as seldom as possible. You will also need some boxes in which to preserve your pupae after you get them home. A box of any kind answers this purpose, provided it is not less than six inches in depth. It should have a gauze-covered lid, and rough sides, some fine silver sand, earth and rotten wood from the heart of some old tree (but garden earth is satisfactory), and on top of this place some moss which has first been thoroughly dried. Nothing more need be done except to lay your pupae on the moss, where they should be left undisturbed until they are ready to come out as a perfect insect (imago). See lesson on Rearing.

**HOW TO DETERMINE SEX.**—The sex of butterflies and moths can be determined at a glance by the shape of the body, color, antennae (feelers) and frenulum.
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bodies terminating to a tu
stout, pointed bodies. In
such as the Swallow-tail
claspers. That is, the ab
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the safest and surest wa
them is by examining th
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is single and stout, while i
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moths have fernlike ant
of the females are thread

### REA

**REARING.**—I have poi
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male insects you may catc
found on tree trunks, fen
day, since many of these
and they are rarely attrac

method used by the average collector. You will also find many damaged females by using any of the methods generally used in capturing insects. The females of most of the moths will usually lay their eggs if placed in large chip boxes, or even paper bags may be used with good results if supplied with the leaves of the plants on which they would naturally deposit out of doors. Feed each female thus confined each day with a piece of apple soaked in water which has been sweetened with sugar, or preferably with honey. Some of these females will lay for many days, depositing as many as 200 or 300 eggs. After they lay their eggs and die, place the eggs in a corked test tube or bottle, and observe them every day for about three weeks. They may not hatch until spring, in which case they should be placed in a cool place during the winter months, lest they hatch out before their food plants are ready. If you discover a female laying her eggs out of doors, save the eggs and notice the food plant. This will save you experimenting to find the proper food plant for that species later on. If you get larvae from eggs, without knowing the proper food plant, then put all kinds of leaves into the box, and when you find what they are eating, you are ready to discard the other leaves.

Female butterflies may often be induced to lay their eggs if confined in a gauze bag, hung over their particular food plant. It is essential to have sunshine, in order to induce the butterflies to deposit their eggs. There are many butterflies, however, that will lay their eggs in paper bags or boxes, just as many moths do, and these need receive no special care other than feeding, as before directed for moths. Insect eggs may sometimes be obtained by dissecting the female, if she cannot be induced to lay, but it is always preferable to obtain them after oviposition has taken place.

Having procured the eggs from whatever source, you will now wish to know the best method by which to rear the larvae when the eggs have hatched. Their first meal is usually the shell of the egg, and this will sustain them for a day or so. If you do not know the food plant, try all sorts of leaves, but the larvae of most moths will devour any kind of leaves. When the little larvae have been fed like this for a few days, it is advisable to move them into larger quarters, preferably into fruit jars, or any bottle with a wide mouth, and as they grow you may move them again if their quarters become too small for them. The jars should contain a little earth a few inches in depth, for the larvae to conceal themselves during the daytime. Barrels, boxes, etc., are splendid cages for larvae, if you have many hundreds. Put in plenty of fresh leaves every day, and keep the cages nice and clean. Of course, all this is rather tedious work, but it will well repay you with many specimens, which can be obtained by no other method.

After the larvae have moulted for the last time, they will either spin cocoons, or pupate in the earth in the bottom of the jars or cages. You may now move them to boxes or barrels, if you desire, until the perfect insect emerges from the pupa. The period required for a larva to turn to a pupa varies, of course, with the different species.

**PRESERVING.**—Butterflies and moths do not require to be preserved in any way, as there is nothing to preserve. However, they must be thoroughly dried or the dampness will cause mould. Specimens can be put up in envelopes just after killing, and if the paper is soft and large the insect will dry thoroughly, provided they are not packed too closely while drying. It is also absolutely necessary to keep them in a thoroughly dry place, or they will soon become mouldy. Always sprinkle naphtalene flakes among the envelopes, or place moth balls among them. Very large moths with big bodies should have the contents removed by making an incision on the underside of the abdomen, and the cavity cleaned with gasoline and
filled with cotton. Ho
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be useless as specimens.

**HANDLING.**—Never
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**PREPARING FOR S**
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a way of folding their wings under them while dying in the cyanide jar. It requires great care to turn the wings of them up over the back, but it can be done very easily with the forceps by placing the jaws of it just under the wings as near the body as possible. During this operation the specimen should be resting back downwards on the palm of your hand, and with a little pressure downward the wings will open up. Experiment on common ones for a day or so and then you will be ready to take care of valuable ones when you capture them.

Write the name, date and locality on each envelope before placing the specimen in it. For the date use the **MONTH** and for the town or locality just use the name of **THE NEAREST TOWN.**

In the case of valuable specimens, always place them in two envelopes, as in this way they can be handled with a greater degree of safety. Make the outside envelope large enough to fold over the inside one completely and the name may be written on it.

**PACKING.**—The specimens must be packed in wooden boxes, and never in any case in paper boxes or tin ones. No specimens will be accepted that are not sent in wooden boxes. Paper boxes always reach me rushed flat, and the fragile contents are usually in pieces. Specimens sent in tin boxes reach me mouldy and are completely ruined for my use. Therefore a wooden box must be used and no other kind. Cigar boxes are excellent for this purpose if a strip of wood is nailed on the ends just under the lid in the inside. This will protect the lid from being crushed in on the specimens. Place a layer of cotton wool on the bottom of the **WOODEN BOX** and sprinkle a few naphtalene flakes on it, or a moth ball crushed to a powder will do for sprinkling on it and among the envelopes. Now build the envelopes in the box neatly, taking great care not to break an antennae or crush the specimen in any way. An ordinary box neatly packed will contain an immense number of specimens. When the box is almost full up to the top, take another piece of cotton, neatly cut with the scissors to the proper size, and place it on top of the whole collection, taking care to put in enough so as to keep the contents in place.

**SHIPPING.**—Always send valuable specimens by insured parcel post. It only costs 5c to insure a package, in addition to the regular charge, and the service given is well worth this little extra; also you will have the satisfaction of knowing that it will reach me. Write your full name and complete address on the package. It would surprise you to know the large number of packages which I receive with no name or address on them. At the time of sending in any of the specimens ordered on my price list, be sure to send me a list of those being sent, and a bill for same. Never enclose a letter or any writing in a package, as it is against the rules of the Post Office Department to do so. Send only specimens that I want and absolutely no samples or unnamed material, as my time is too fully occupied all summer to waste examining them or to answer foolish questions regarding some peculiar specimen that may be found. I receive scores of match boxes with some specie of insect in it all crushed to pieces, and in the same mail will come a letter advising me of the specimen being forwarded, and maybe a hundred and one questions as to value, name, etc., although I make it clear that I have no time to name material or answer such questions.

**SEND PERFECT SPECIMENS.**—Send only perfect specimens. If the antennae are lost, a wing torn or notched, the scales or plumages rubbed or worn, the specimen will be unsalable, and all such should be destroyed. All specimens are perfect when they emerge from the pupae, so by careful handling you will save them all. Of course some specimens that have been flying for some time become worn and damaged by the wind, or beating thei
these can always be seen

**RELAXING.**—Possibly
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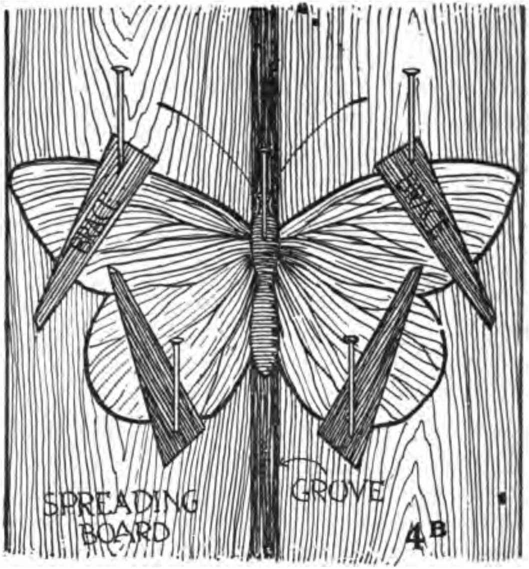
may be treated as if they

**MOUNTING ON PINS.**
mens when fresh.

**EXPANDING THE WINGS FOR DISPLAY IN CABINETS, EXHIBITION CASES, SPECIMEN MOUNTS OR PICTURES, ETC.**—Cases of butterflies can be sold in every town, as every home, office and store is a possible customer. Therefore I will explain how to properly mount the specimens. This is done either by using pins and setting boards, and then pinning the mounted specimens in cabinets or cases which have the bottoms lined with cork, or by spreading the specimen on a smooth surface on its back and placing the mounted specimen in a Riker mount, which is a case filled with sterilized cotton. The specimens are placed on the cotton, and a glass lid rests on them and keeps the specimens in place.

**EXPANDING FOR CABINET.**—See CUT Fig. 4-B. Pin the insect through the center of the thorax, taking care to set the pins as perpendicular as possible. Having pinned the specimen to your satisfaction, it is now ready to be expanded. For this purpose a setting board should be used, varying in width from one inch and a half to six inches, according to the expansion of the insect to be mounted.

You can easily make one of these boards, should you have any trouble in procuring one.



Procure for this a soft piece of inch and a quarter pine, 12 or 15 inches long, and of varying width, according to the expansion of the insects to be set. Exactly in the center of this piece plow a groove to a depth of seven-eighths of an inch, which depth should be the average height of all Lepidoptera above the point of the pin inserted. On the bottom of this groove a thin layer of cork should be pasted or glued, and the board is ready for use.

To expand an insect properly is a difficult matter, but after a little practice some obtain very good results. Collectors, as a general rule, pay too little attention to good setting. The pin should be carefully inserted, as perpendicular as possible, in the center of the thorax of the insect, and placed in the middle of the groove. The chief difficulty of good setting is in seeing that the pin does not lean towards either side after it is pressed into the cork in the groove.

Take four pieces of thin cardboard about an inch long and three-eighths of an inch wide at one end, terminating in a point at the other. With a fine needle, immediately behind the nervure of the costal margin of the wing, draw the upper wing of either side forward, until the inner margin forms a right angle with the body. Take one of the pieces of cardboard and pin it over the wing. Do the same with the under wing, and repeat on the other side. If the groove is too wide or deep for the insect, keep the body from sinking in by supporting it on two pins. The first pair of legs may be brought forward in a natural manner, and the antennae should be spread out on the board and kept in place b
cloth.

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carefully kept out of du
thoroughly dry, they may
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**HOW TO EXPAND**
**“RIKER MOUNT.”**—It is
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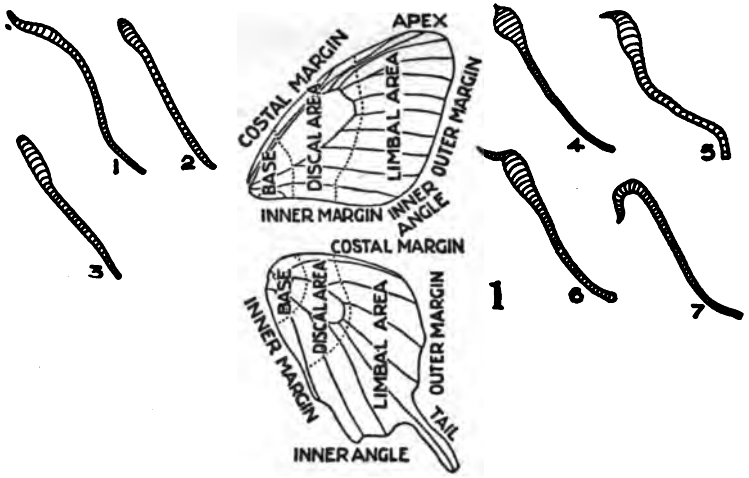
until the inner margins
spread. Then lay strips o
in place while drying, a
spread in a natural way.

## LESSON VI.

**CUTS and DESCRIPTIONS of VALUABLE BUTTERFLIES and MOTHS**—Most of the butterflies and moths given herein are valuable ones, but as there are a number of common ones which are very similar to them in appearance, I have added them also, so as to not confuse you. There are many described and figured in these instructions which are very valuable, and a great many of them have only been described in scientific periodicals, so are not to be found in most books. Edward's Books, costing $150.00, do not even give illustrations or descriptions of many of them. All the most important literature on the rare butterflies and moths is only found in publications of institutions and learned societies. This makes it almost impossible for the average person to get them, as most of the original descriptions are only contained in publications dating as far back as 1864. So you can see that it means considerable work and time to go through a mass of literature, hunting for the descriptions of some of these specimens. It took me many months before I could find descriptions of them all, but now I produce them herein so as to make it easy for you, and save you the considerable expense and time, which I have had to devote to it. Kindly remember that I buy all those on my price list at present, and no others, until further notice. You will find a great many different species not shown in these instructions, because I give only the valuable ones and a few common species. Any species that you cannot name should be stored away until you learn the names of all the ones that fly in your locality. If you capture any shown in these instructions that I am buying, send it along at any time, or better, hold until you get a number to send. There are a number of common ones in these instructions that I am not buying, but in most cases you will find that there is a variety or form of it that I do buy. For example, take **PAPILIO ASTERIAS**, which is subject to considerable variation. One form of it, in which the yellow spots on the wings are so extended as to cover the entire outer half of the wings, was named **PAPILIO CALVERLEY**. I will pay $1.00 each for these. There are a number of other very common species, which are subject to considerable variation, and some forms are in big demand.

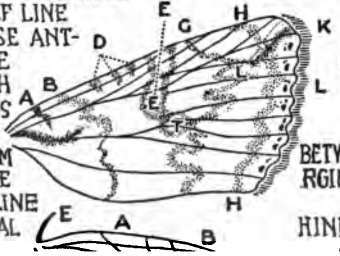
**PAPILIO (Swallowtail Butterflies).**—The butterflies of this genus are of large size and usually black maculate with yellow and blue, or yellow maculate with black. The hindwings usually have tails. There are about thirty different species of these found in the United States and Canada north of Mexico. I describe

# WING OF A SWALLOW-TAIL BUTTERFLY



# WINGS OF AN UNDERWING MOTH

EXPLANATION OF FOREWING
A - BASAL HALF LINE
B - TRANSVERSE ANTERIOR LINE
C - BASAL DASH
D - COSTAL DOTS
E - RENIFORM
T - SUBRENIFORM
G - TRANSVERSE POSTERIOR LINE
H - SUBTERMINAL LINE



BETWEEN B AND G IS MEDIAN SPACE

BETWEEN G AND H IS SUBTERMINAL SPACE

BETWEEN H AND OUTER MARGIN IS TERMINAL SPACE

HIND WING
A - MEDIAN BAND

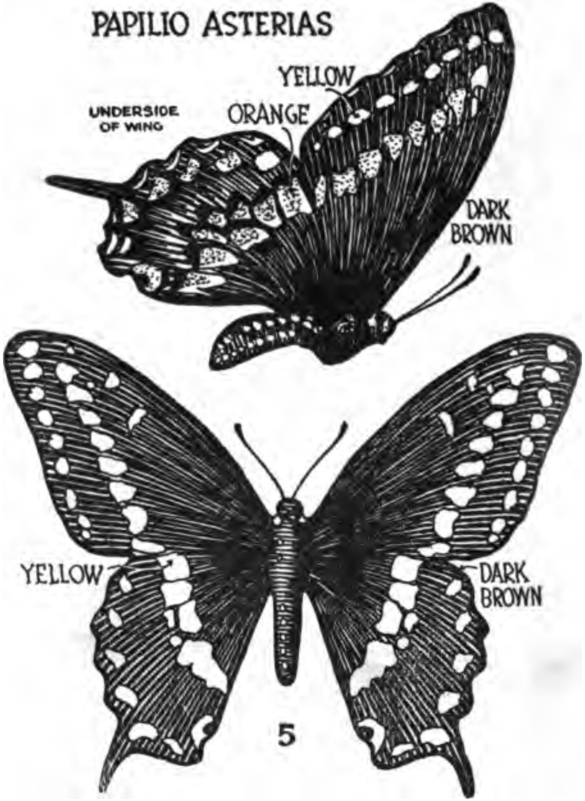
most of them and give illustrations of a large number.

**PAPILIO ASTERIAS** (Eastern Swallowtail).—This species needs no description, as it is well represented by the cut Fig. 5. The key to the species is the SPOTTED BODY, which is shown on the upper CUT showing the underside of the wings.

**P. CALVERLY** (Calverleyi Swallowtail).—This is just a form of P. asterias, but it has the yellow spots so extended as to cover the entire out half of the wings. Look out for this form wherever P. asterias flies.

**P. BAIRDI** (Baird's Swallowtail).—This is another FORM of P. asterias in which the yellow spots are much wider than the type. It is also larger and the spots on the underside are not clouded with fulvous. The body is SPOTTED.

**P. HOLLANDI** (Holland's Swallowtail) — This species is supposed to be the result of a union between P. bairdi and P. zolicaon. The yellow bands of the wings are wider than they are in P. bairdi, but does not reach the base of the hindwing as in P. zolicaon. The body of this species is almost entirely yellow.



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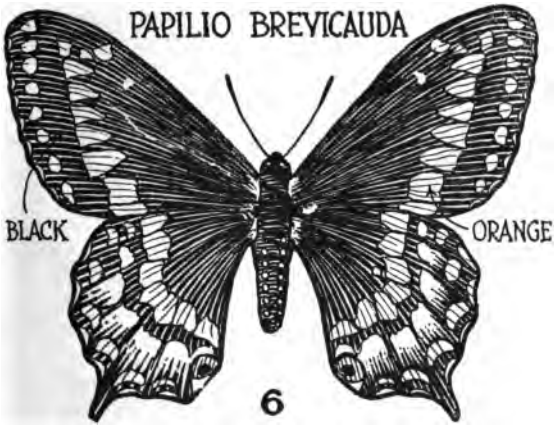
**P. BREVICAUDA** (Brevicauda Swallowtail).—This is another form of P. asterias, but differs considerable from the type in having very short tails, and the wings shaped differently. See CUT Fig. 6. The body is spotted.



6

**P. ZOLICAON** (Zolicaon Swallowtail).—This species is well shown on the CUT Fig. 7. Yellow band reaches the base of hindwing. The abdomen is black below, with a lateral yellow line.

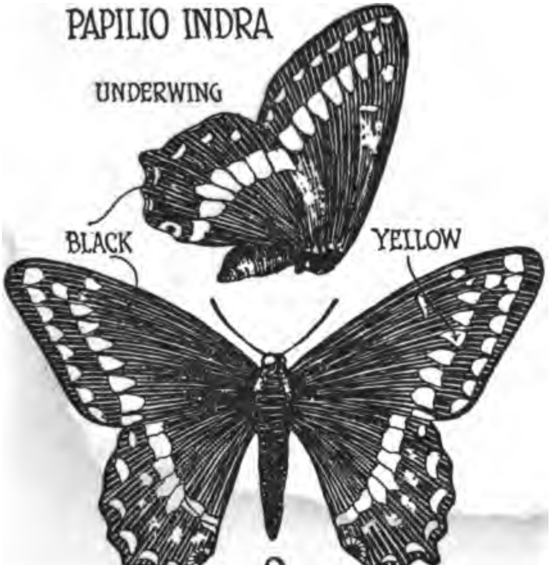
**P. ALAISKA** (Alaskan Swallowtail).—This species resembles P. zolicaon, but the band on the forewings is very wide, and the band on the hindwings extend to the base. It also differs
body is entirely yellow.

**P. OREGONIA** is also v
is larger, the tails are wid
the underside of wings a

**P. BRUCEI** (Bruces' S
similar to P. oregonia, bu
the underside of the wing
the forewings is entirely
black. In P. oregonia th
side of the forewings appe

**Asterias Group.** Always bear this in mind. See the CUT Fig. 9, showing upper and under side of the wings.

**P. INDRA** (Indra Swallowtail).—At once known by its short tails and the black body. The body in P. indra and P. pergamus is never spotted as in the



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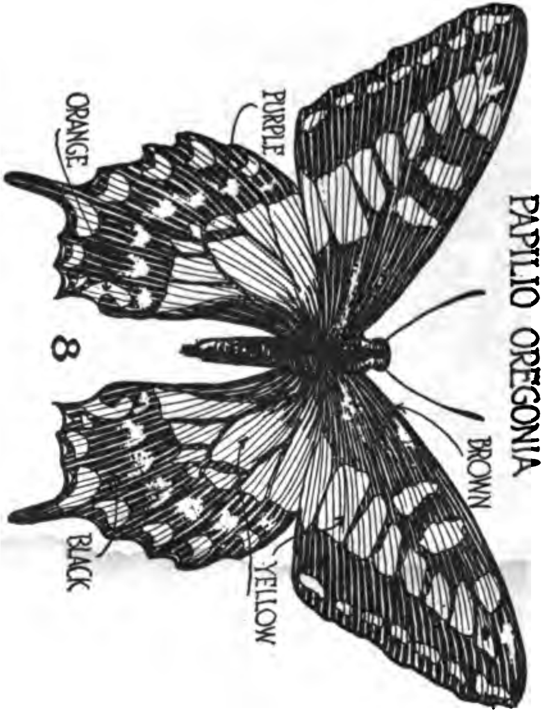

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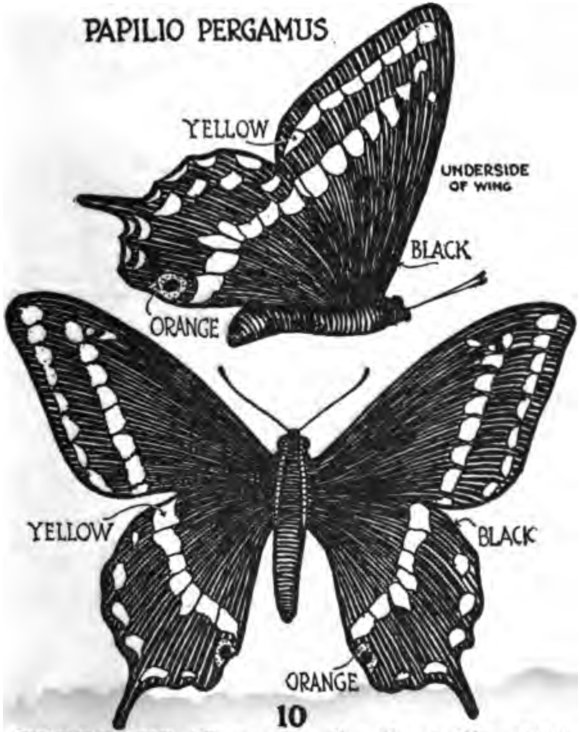


10

**P. PERGAMUS** (Pergamus Swallowtail).—This is a variety of P. indra, but it differs in having long tails. See CUT Fig. 10, showing both sides of the wings. The body is BLACK and not spotted, as in Asterias.

**P. RUTULUS** (Rutulus
species is so well illustrat
it needs no description. It

**P. AMMONI** (Ammon'
form of P. rutulus, but i
yellow it is dark dull orang
exactly the same.

**P. ARIZONENSIS** (Arizona Swallowtail).—This is another form of P. rutulus, being exactly the same in color, but the tails are turned inwardly and are much shorter. The bandings on the wings wider, and more extended.

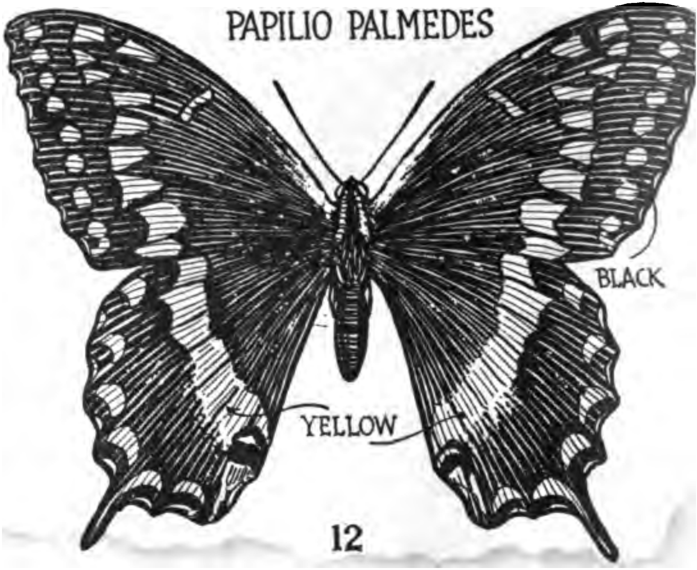
**P. EURYMEDON** (Eurymedon Swallowtail).—This species is exactly the same as rutulus, structurally. But instead of having the ground color of the wings yellow, they are white with black bands.

**P. ALBANUS** (Albanus Swallowtail).—This is another form and is just like P. eurymedon, in having the ground color white, but the bands are so wide that they almost cover the white altogether, but the white is always distinct. It is found on the highest mountains.

**P. TURNUS** is the Eastern one resembling P. rutulus and is common. It is yellow and black.

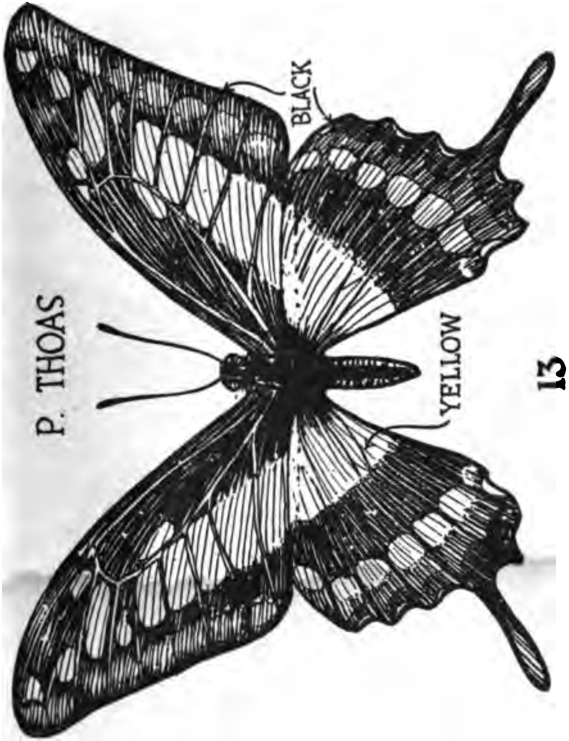
**P. GLAUCUS** (Glaucus Swallowtail).—This form of P. turnus is found in the female only. It is entirely brown or chocolate color. You cannot mistake it for any other, as it is so large and dark. It is the dark female of P. turnus.

**P. PALMEDES** (Palmedes Swallowtail).—This common species is shown on the CUT Fig. 12.



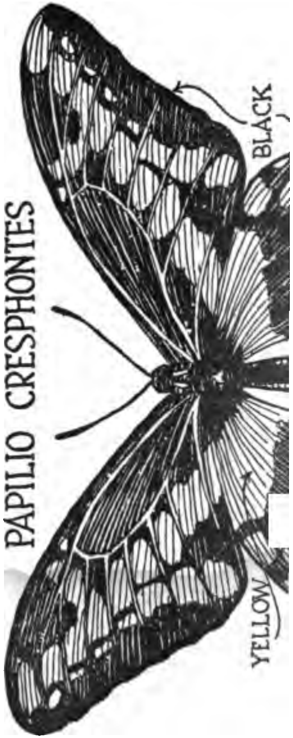
## LESSON X.

**P. THOAS** (Thoas Swallowtail).—Needs no description. See CUT Fig. 13.



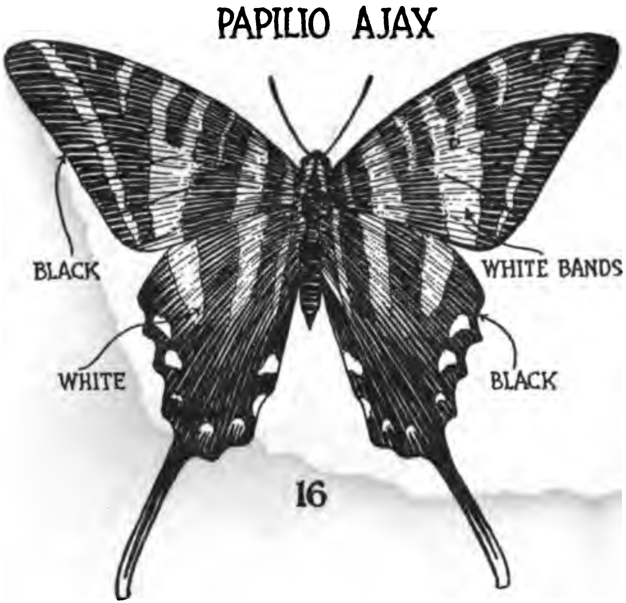
13

**P. CRESPHONTES.**—Th
and is a variety of P. thoas
ence at once by referring



**P. PHILNOR** (Philnor Swallowtail).—This species flashes glossy bluish green. I show both upperside and underside of it. See Fig. 15. It is very common.

**PAPILIO AJAX.**—At once known by its long tails. See Fig. 16. Very common.



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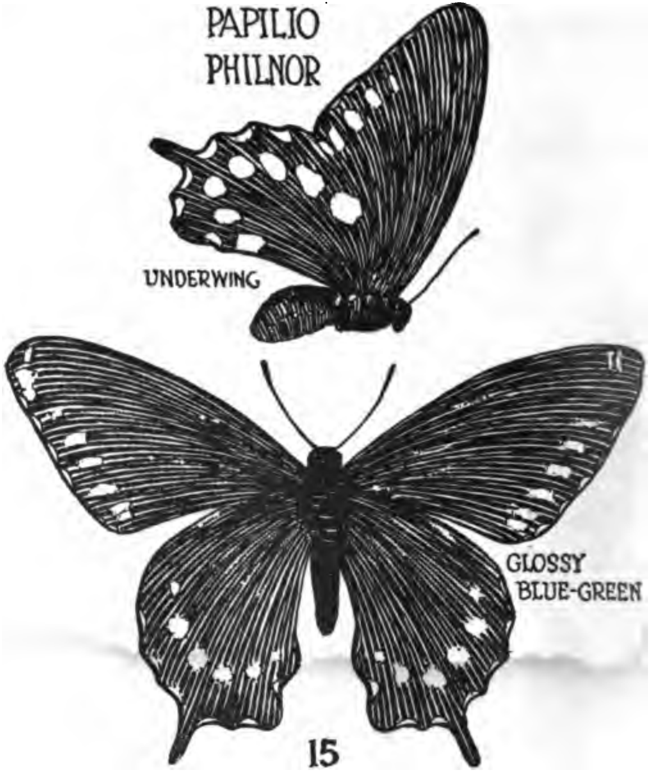
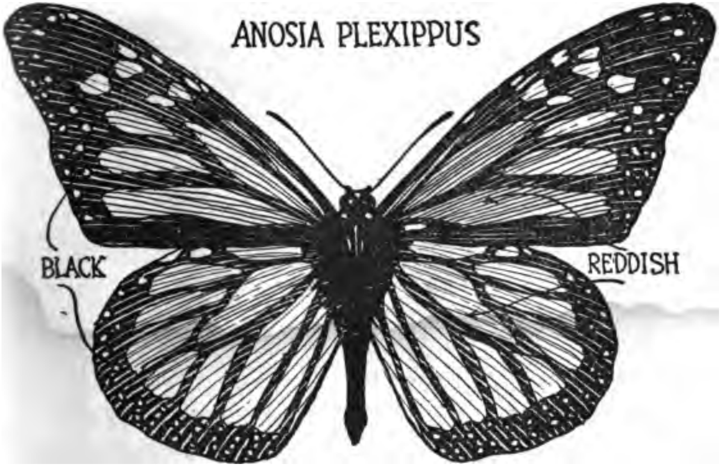


15

**P. NITRA** (Nitra Swallowtail).—This species is similar to P. zolicaon, in having the wide band on the hind wings, but it does not reach the base, as in it. The band on the hind wing is also much bowed. The body is black, except in some cases a very little line of yellow. In zolicaon the underside of the body is black, but it has a fairly wide yellow line or band on the sides of the body.

**ANOSIA PLEXIPPUS** (Monarch).—Needs no description. See Fig. 17.



17

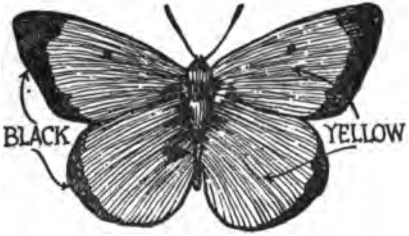
**VANESSA ANTIOPA.**-
description. There is a re
essa antiopa in which the
reach almost to the middl
them.

There is another aber
there is no yellow borde
named Vanessa hippolita
them.

**COLIAS PHILODICE**
common yellow butterfly
seen abundantly over mo

**Canada. However, I give it here because it is one of those species subject to considerable variation, and there are some forms that I wish to get. See Fig. 19. There is one form that is almost black instead of yellow. It is named Colias nigra. I pay 50c each for them.**

COLIAS PHILODICE



19

**COLIAS HECLA.—This species is a dark orange color, found on high mountains and the Arctic. Underside of wings are greenish, with a row of yellow spots. It is very dark orange on the upper side.**

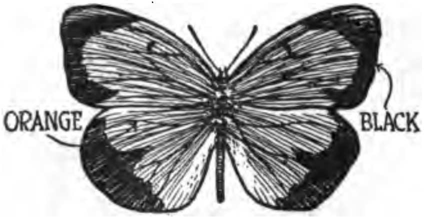
**COLIAS PILIDNE.—Differs from C. philodice by the absence of a black spot on the upper side of forewings, no submarginal spots on the under side of hindwings, and the very narrow black margins to both wings. The female of this species has no markings on the wings at all and is white. Labrador species.**

**COLIAS CHIPPEWA.—This species has wide borders to the wings and straight on the inside, also not crossed with yellow veins, and no black spot on the forewings. Under side of wings immaculate, and slightly overwashed with greenish.**

**COLIAS NASTES.—This species has the wings greenish above. Central spot on both wings enclose a white center below. Found usually in the far north.**

**TERIAS NICIPPE.—This little species is well represented by the CUT Fig. 20. In color it is ORANGE.**

TERIAS NICIPPE

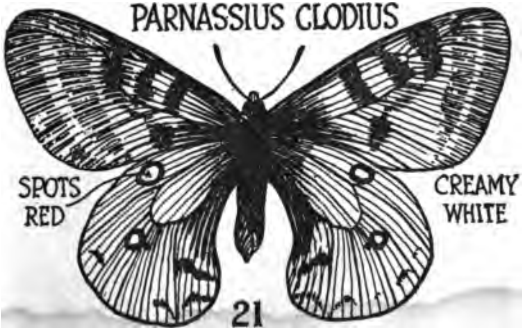


20

**It is a very common species. There is a very light yellow form of this species sometimes captured. I describe it below, and pay 25c each for it. I do not want any of Terias nicippe at present, only the form below.**

**TERIAS FLAVA.**—This is the same as the above, but instead of being orange it is a very light yellow. Look out for it. It is marked exactly like T. nicippe, but is yellow instead of orange. I pay 25c each for them.

**PARNASSIUS CLODIUS.**—This is a mountain fly, and is well represented by the CUT Fig 21. Creamy white above and transparent. Hindwings with two red spots.



**PARNASSIUS ALTURUS.**—Same as clodius, but the spots on the hindwings are YELLOW instead of red, as in P. clodius.

**PARNASSIUS SMINTH**
ilar to Clodius, but is nea
It is marked different, as i
Hindwings with red spots.

**PARNASSIUS BEHRII.**-
same as smintheus, but h
YELLOW instead of red.
bright yellow, not orange,
have pink or orange spots

**PARNASSIUS HERMO**
but differs in having the
smoky.

**PARNASSIUS SAYI.**—This is a form of smintheus found in the female only, in which the spots on the hindwings are white.

**PARNASSIUS SEDAKOVI.**—This species is smoky, like P. hermodur, but differs from it in having absolutely no red on the FOREWINGS. It is also a small species.

**PARNASSIUS NANUS.**—This is the smallest Parnassius, measuring only one inch and three-quarters in expanse. They are similar to the smintheus type, but the male has no red on any wing. Female is dark with only two faded red spots on the costal of forewings, and the red spots on the hind wings have white centers.

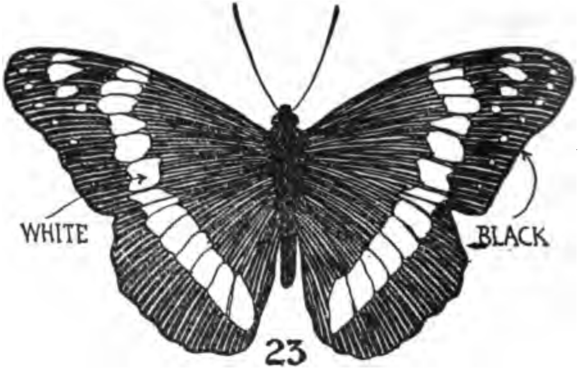
**PARNASSIUS EVERSMANNI.**—This species may be known at once by the fact that it is DEEP ORANGE in color.

**BASILARCHIA WEIDEMEYERII.** See CUT Fig 23. It needs no description.

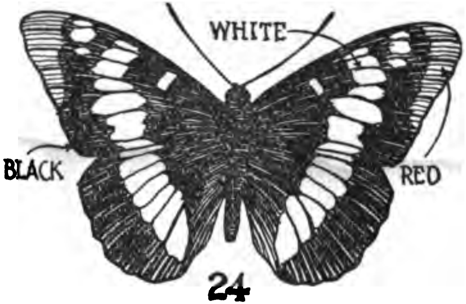
**BASILARCHIA SINEFAECIA.**—This is just the same as weidemeyrii, and is only a form, in which the wide central band is missing.

**BASILARCHIA LORQUINI.**—See the CUT Fig. 24. It is known at once by the reddish bar near the end of the cell on the forewings, and the apices of the forewings are red.

BASILARCHIA WEIDMEYERII

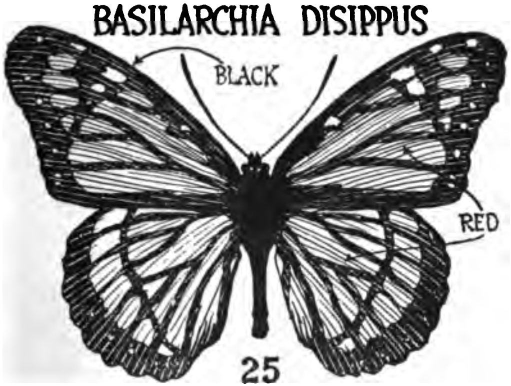


BASILARCHIA LOROUINI



**BASILARCHIA EAVES.**—Exactly like B. lorquini and is only a form in which the red at the apices of the forewings is missing.

**BASILARCHIA DISIPPUS.**—This common species is shown on the CUT Fig. 25. It resembles Anosia plexippus, but is smaller, as seen by the cut, and there are other differences too.



25

**BASILARCHIA PSEUDODORIPPUS.**—This is exactly the same as B. disippus, but differs only in having no black band on the hindwings.

There are two other species which closely resemble the above, but they have more white spots on the forewings, just like Anosia plexippus. They are named Anosia berenice, and Ano
them at present, but I p
dorippus.

**BASILARCHIA FLOR**
similar to Disippus, but di
larger. The best key to it i
the hindwings, as within
white spots displayed in th
next species, namely B. obs

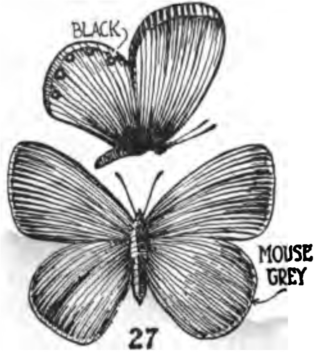
2

**BASILARCHIA OBSOLE**
fers from Disippus in havi
the hindwings instead of a

**HETEROCHERA CALIFORNICA.**—This species is marked after the style of Basilarchia weidmeyerii, but the bands are not so wide, and on the forewings upperside is a large patch of orange red near the apex.

**HETEROCHERA BREDOWII.**—This species is just exactly like H. californica, but differs in having the band across the wings yellow instead of white, but otherwise the same.

NEONYMPHA HAYDENI



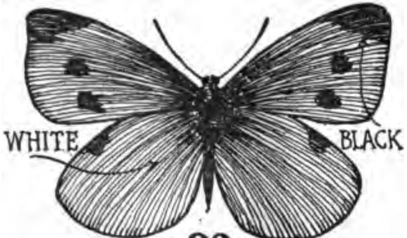
27

**NEONYMPHA HAYDENI.**—See CUT Fig. 27. This species is mouse gray above, and on the under side there are a row of small spots, black-ringed with yellow.

**NEONYMPHA MITCHELLI.**—Resembles the above species, but differs in having a number of eye-spots on both wings, on the under side. Four on the forewings and six on the hindwings. It seems to be most abundant in all the Eastern States, especially about New Jersey.

**PIERIS RAPAE** (Common Cabbage Butterfly).—This common species is found all over the U. S. and Canada. It was introduced from Europe, and since that time has spread all over. See CUT Fig 28. It is subject to considerable variation, so there are forms of it that I buy; so look out for them anywhere. They are given below.

PIERIS RAPAE



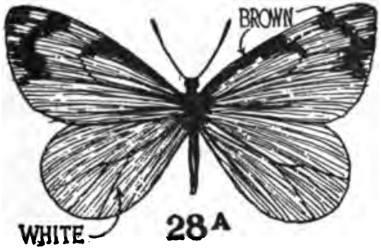
28

**PIERIS NOVAE-ANGLIAE.**—This species is marked exactly like P. rapae, but all the wings are YELLOW, so you cannot mistake it for any other. Whenever you discover colonies of Rapae always be on the look out for this one among them.

**PIERIS MANNI.**—Is just the same as Rapae and Navae-angliae, but is not quite so dark a yellow as the latter.

**PIERIS MENAPIA.**—Needs no description. Note the dark brown line along costal margin. See CUT 28A.

NEOPHASIA MENAPIA

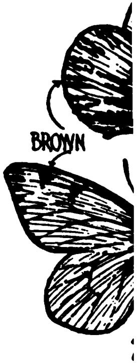


**PIERIS SUFFUSA.**—This is only a form of the preceding, but instead of having the dark markings on the forewings dark brown, they are reddish and very heavily marked, on both upper and lower side.

**PIERIN SISYMBRI.**—See CUT Fig. 28B, that shows exactly how it is marked. It is white with brown markings.

**PIERIS FLAVA.**—This
ceding; the only differenc
white it is distinct yellow,

PIERIS

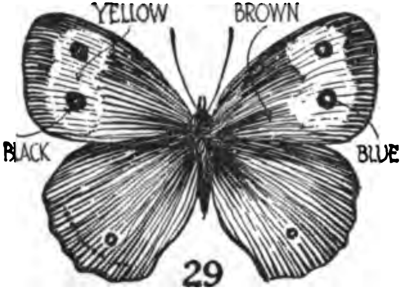


**SATYRUS PEGALA.**—
and differs from Alope in
the forewings upper side.

**SATUYUS MARIANA.**-
in New York State, especi
fers from Alope in having
wings deep orange.

**ATYRUS ALOPE.**—This common species is shown CUT Fig. 29, but it is subject to considerable vari- n, so there are a few forms that I buy which I will e below.

SATYRUS ALOPE



29

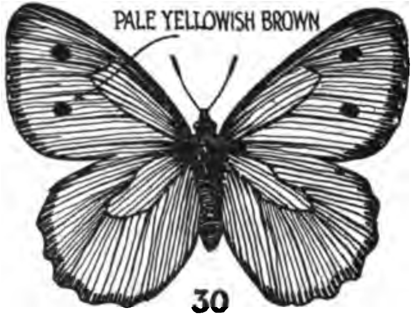
**ENEIS IDUNA.**—This species is shown on the CUT . 30. Most of the species of this Genus are found high mountains or far north. The color is brown, yellowish brown. On the underside the wings are st beautifully marbled and mottled.

**ENEIS GIGAS.**—This species is similar to the pre- ing, but is darker. It is found on Vancouver Island, may be taken elsewhere.

**ENEIS MACOUNI.**—Similar to the preceding, but ers in having a broad band of dark brown on the ler side of the hindwings. It is found in Alberta stly, and has been taken around Lake Superior.

## LESSON IX.

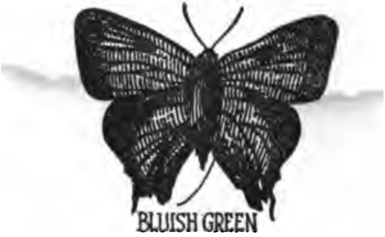
OENEIS IDUNA



30

**THECLA HALESUS.**—Well represented by CUT Fig. 31.

THECLA HALESUS

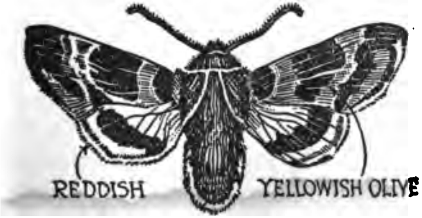


31

**OENEIS INVALLDA.**—I received a number of this species last season from Donner, Cal. It flies in the early Spring. It cannot be mistaken for others of the Genus, as it is very pale brown. The female is very light-colored, but the male has the wings a little darker at the base of the forewings.

**THECLA CRYSALUS.**—Similar to above, but differs in being purple, margined with black. At the inner angle of the forewings and hindwings are large orange spots. There is a broad black band running across the forewings.

ARCTONOTUS LUCIDUS



32

**THECLA CITIMA.**—Same as the preceding, but does not have the orange spots at the inner angle of all wings.

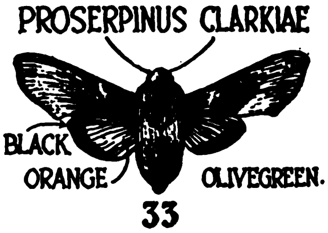
## SPINGIDAE (

The Hawk-moths maye be row wings and long bodie beyond the hindwings. They humming birds when on the in the dusk of evening, but day, and may be found hov are many different species o United States, but I figure o ones, so be sure that your s the **CUTS** herein before wri velope. Remember that all cribed in these instructions **CUTS**, and the only differenc markings.

**ARCTONOTUS LUCIDUS** that the color of this species and the band on the middle **Hindwings** reddish with a ri It expands about two inche mainly **YELLOWISH OLIV**

**ARCTONOTUS TERLOOI.** preceding in shape, but diffe entire red, and not banded.

**PROSERPINUS CLARKIAE** (Clark's Day Hawk-moth.—See the **CUT** Fig. 33. The colors of this species are pale **OLIVE GREEN** with a brownish band on the forewings. The hindwings are orange yellow with a dark marginal band.

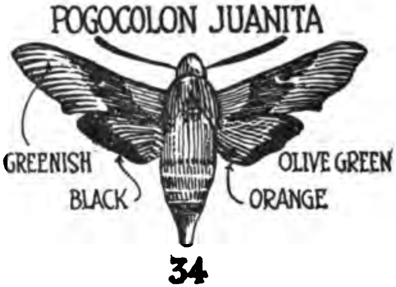


**PROSERPINUS FLAVOFASCIATA** (Yellow Banded Hawk-moth).—This species is similar to the preceding, but differs in having the head and thorax (middle part of body) yellow, and the abdomen black. The forewings are blackish, crossed by a white band. The hindwings are black, but crossed in the middle by a very wide yellow band.

**EUPROSERPINUS PHAETON** (Phaeton Hawk-moth).—This species is also similar in structural respects to Clarkiae, but differs in being grayish brown with a black abdomen. The hindwings are the best key, as they are black with a **VERY** broad **WHITE** band.

**EUPROSERPINUS EUTERPE** (Euterpe Hawk-moth).—Just exactly the same as the preceding, but differs only in having the black band or hindwings at the outer margins bent **INWARDLY** instead of even, as in Phaeton.

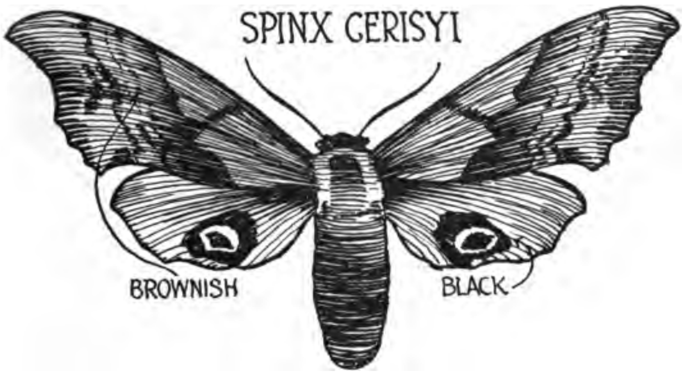
**POGOCOLON JUANITA** (Strecker's Hawk-moth).—This little species is shown on **CUT** Fig. 34. Olive-greenish above. Hindwings orange with dark margin.



**POGOCOLON GAURAE** (Gaura Hawk-moth).—This species is just like the preceding, but is smaller and the colors not so bright.

**SPINX CERISYI** (Cerisy's Hawk-moth).—See **CUT** Fig 35. The forewings are dentate on the outer margin and marked with brown. The hindwings show an ocellus with one blue spot.

**SPINX ASTARTE** (Astarte Hawk-moth).—Same as the preceding, but the outer margin of the forewings is not dentate, or if any, very little. The brown markings are also very limited.



35

**SPINX OPHTHALMICA.**—This species is just the same as Cerisyi, but the wings are very pale.

**SPINX PALLIDULUS.**—This species is just the same in structural respects as the preceding, but is cinnamon-gray colored.

**SPINX SALICETI.**—Just the same as the preceding, but the large blue spot on the hindwings is not surrounded by a ring, but instead, two crescents.

**SPINX GEMINATUS** (T
This species is much smaller
and is found only in the Ea
the West and from Canada
found on the Pacific Coast a
from any of the above by t
wings being divided into tw

**SPINX JAMAICENSIS** (
species is the same as Gemin
only one spot. It is found i
States only.

**SPINX TRIPARTITUS** (T
—This species is similar to t
but has three blue spots. I w
inatus on a large scale, and
number of the different form

**SATURNIDAE** (Silk-mot
family are all medium or l
(feelers) are feathered, singl
in the male in most cases, bu
them doubly pipectinated in
frenulum on the hingwings o
(caterpillars) make large co
to twigs of trees, and anyon
the winter and spring.

**SAMIA GLOVERI** (Glover's Silk-moth).—See CUT Fig. 36. It needs no further description. There is a very small form found on the very high mountains only and is named Samia reducta.

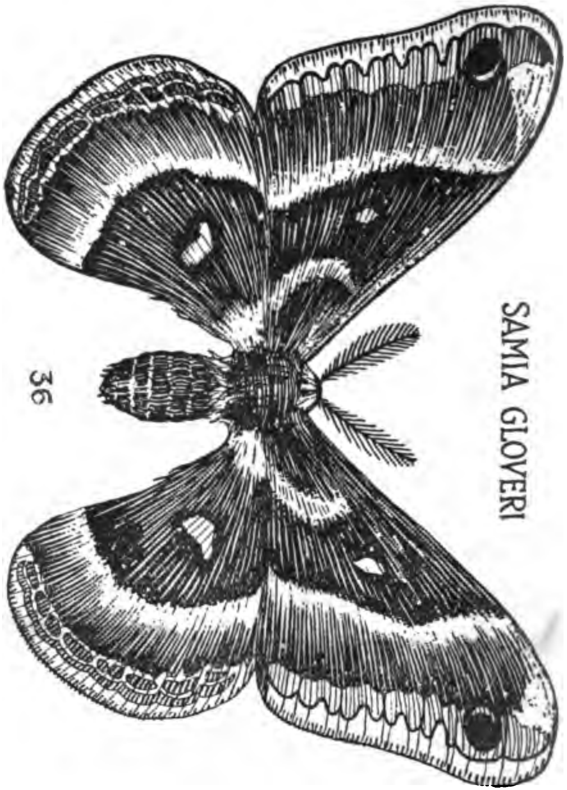
**SAMIA CECROPIA** is just like the preceding, but it is much larger. It is found in the Eastern States, and Gloveri in the Western.

**SAMIA RUBRA.**—This species is similar to the preceding, but differs in being small and reddish.

**TELEA POLYPHEMUS** (The polyphemus Silk-moth).—See CUT Fig. 37. It needs no further description. This species is one of those subject to considerable variation, so be on the lookout for aberrations. I want all the black forms and white forms. Breed them to see what you can get.

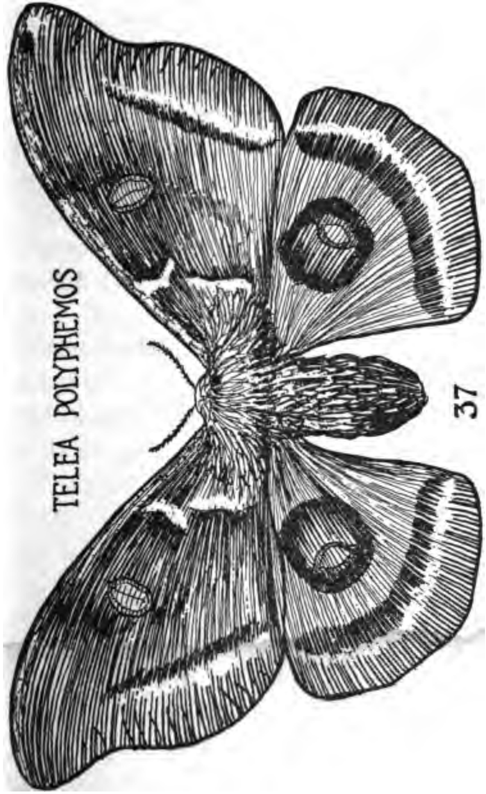
**ACTIAS LUNA** (the luna-moth).—See CUT Fig. 38. It needs no description, and is very common.

**SATURNIA MENDOCINO** (Mendocino Silk-moth).—See CUT Fig. 39. Antennae are FERNLIKE, very much more so in the male than female. Note the colors carefully. The forewings are SMOKY, REDDISH CHOCOLATE above, with an eye-spot surrounded by a WHITE ring or disk. Hindwings bright yellow with a black spot and distinct black band. This species seem to be rare, but I received some from San Benito



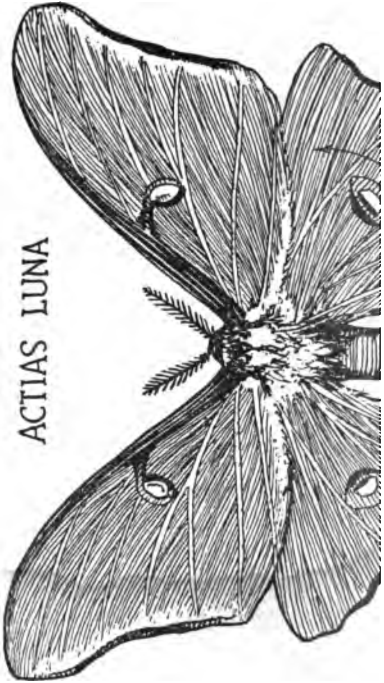
36

SAMIA GLOVERI



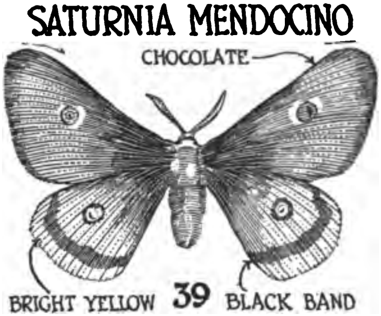
TELEA POLYPHEMOS

37



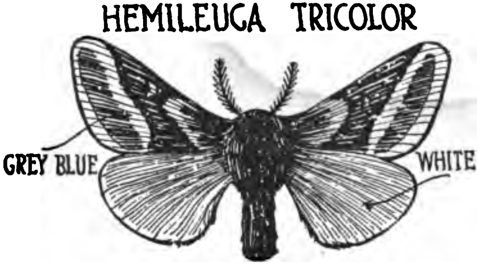
ACTIAS LUNA

**County, and Suisun City, Cal., during the last two years. Females fly during the day but the males that I have received were taken at night.**



39

**HEMILEUCA TRICOLOR (Tricolor Buck-moth.)—See CUT Fig. 40. This little species needs no description. The males have yellowish antennae and are FERNLIKE.**



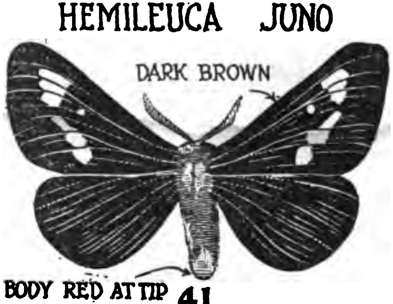
40

**MEMILEUCA NEUMOEGENII (Neumoegen's Buck-moth).—Similar in structural respects, but has the wings all white, crossed with orange and black bands. Two on the forewings and one on the hindwings. The body is brownish and the thorax (middle part of body) is white.**

**HEMILEUCA HULAPAI (Hulapai Buck-moth).—This species is similar to the preceding, but differs in having all the wings PINK.**

**HEMILEUCA SORORIUS (Sororius Buck-moth).—This species also has all the wings pink, but differs from Hulapai in having pale transverse markings on the wings.**

**HEMILEUCA JUNO. See CUT Fig. 41.**

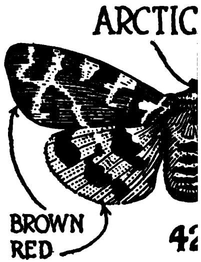


41

**HEMILEUCA GROTEI.**—Exactly similar to Juno in structural respects, but differs in having the wings black with a few small white spots on the forewings, and a narrow band of white spots on the hindwings. The body is also black with a white color.

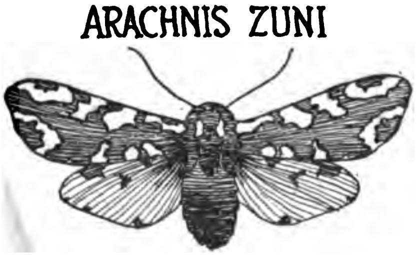
**ARCTIDAE** (Tiger-moths).—The moths of this family are usually bright-colored. Most of the species have the wings gaily colored and crossed with white bands. Over one hundred different species of them are found in the United States and Canada, but for these instructions I have selected only the valuable ones, which can be recognized at a glance by an illustration and brief description. Therefore when you capture any Tiger-moths compare them carefully with the illustrations of all those figured herein before writing the name on the envelope, and if they are not marked exactly the same you can be certain that it is not one of them.

**ARCTIA CAIA** (The great Tiger-moth).—This species is well represented by CUT Fig. 42. The forewings are BROWNISH, crossed with white bands, just as shown in the CUT. The hindwing
black spots.



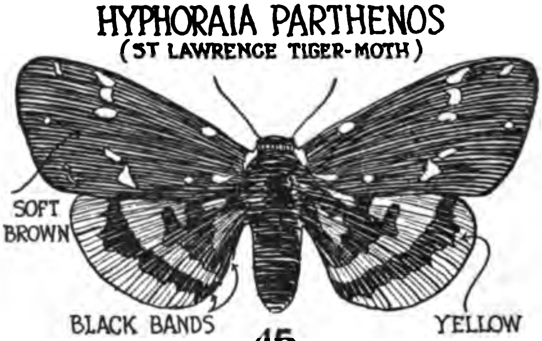
**ARCTIA WISHOTTI.**—
ceding species, but is larg
are much wider. The hin
large round black spots. S

**ARACHNIS ZUNI** (Zuni Tiger-moth).—This species is well represented by the CUT, Fig. 44, and needs very little description. The forewings are not banded, but are spotted with large brown spots. The hindwings are whitish with one or two brown spots. I have received this species from Raton, N. Mex.



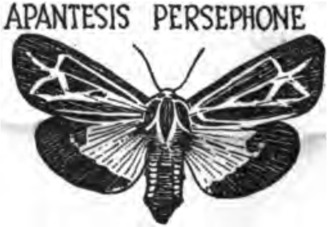
44

**HYPHORAIA PARTHENOS** (St. Lawrence Tiger-moth). See the CUT Fig. 45. This is a very pretty species, although the wings are not crossed with white bands, as in most of the others. The forewings are **SOFT BROWN** and orange yellow, spotted with a few yellowish white small spots. The hindwings are black at the base and yellow beyond the middle. There is also a black band crosses the wing within the yellow, as shown in the CUT Fig. 45.



45

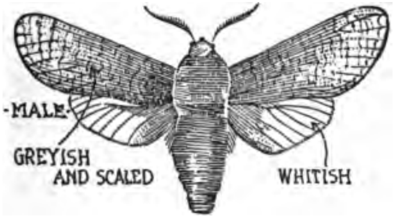
**APANTESIS PERSEPHONE.** See CUT Fig. 46.



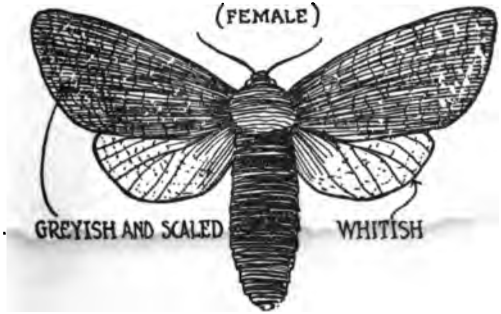
46

**APANTESIS ANNA** (the Anna Tiger-moth).—This species is exactly the same as the preceding on the forewings, but differs in having the hindwings entirely **BLACK.**

**COSSUS CENTERENSIS** (Centerensis Goat-moth). —This is a rare Eastern species and is well represented by CUT Fig. 47, which shows a male and female. The forewings are very lightly scaled, marked with fine lines, so are semi-transparent. The antennae (feelers) are bipectinated (feathered) attracted by light or any ot must be searched for resting (caterpillars) are internal trees, so by examining all t signs of them, it is possib colony at work.



COSSOS CENTERENSIS



47

**COSSUS UNDOSUS** ( species is larger than the pr tively marked. The wings a also there is a distinct black middle, and another near th wings. It is found mostly i Mountains.

MILITTIA G

**MELITTIA GLORIOSA** (

his species is well represented by the CUT Fig. 48. t is very gaily colored, and in appearance is similar to wasp. They fly during the hottest part of the day nd are swift flyers.

**MELITTIA GRANDIS** (Grand Sesidae Moth).—Just he same as the preceding in structural respects, but the orewings are not transparent. I have received this pecies from Douglas, Arizona. The collector informed ne that he discovered it one-half mile from the town, overing over small white flowers, which he refers to s "FEVER FLOWERS."

### CATOCALAE (Underwing-moths)

The moths of this Genus are usually large, and the najority of them have the hindwings red, banded with lack, but a number of the species have dark brown indwings, or brown with a white band. These moths re attracted by the sugaring method, and are always he first visitors to the bait in the evening.

**CATOCALA SAPPHO** (Sappho Underwing).—This pecies is well represented by the CUT Fig 49. The orewings are white, with a dark spot on the costal margin. The hindwings are dark brown. This species has a very wide range all over the Eastern States and as far south as Texas. I received a fine specimen from Myrtle, Mississippi.

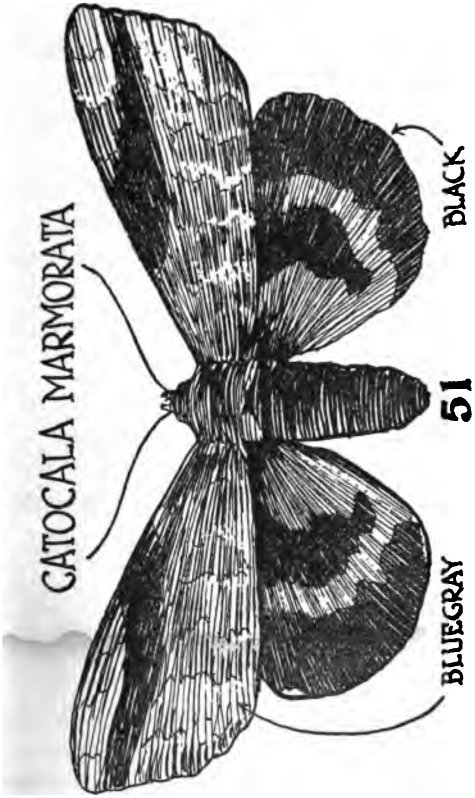
**CATOCALA RELICTA** (Relict Under-wing).—See Fig 50. The forewings are white and powdered with black. The hindwings are black with a white median band.

**CATOCALA PHRYNIA** (Phrynia Underwing).—Same as the preceding, but differs in having the forewings more evenly powdered and shaded with black.

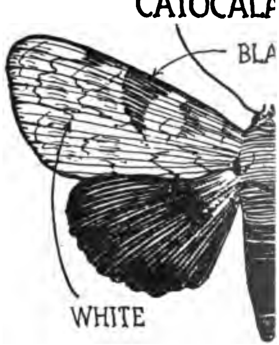
**CATOCALA BIANCA** (the Bianca Underwing).—Same as Relicta, but differs in having the basal space, and the limbal area near the outer margin on the forewings black. The three preceding are always known by the white band on the hindwings.

**CATOCALA MARMORATA** (Marbled Underwing).—This species is known at once by the very dark shading running from the costal margin and ending subapically, as in the CUT Fig. 51. It is also easily known by its large size, as it measures four inches or over. There are other large ones too, but not four inches in expanse, with dark shading. The forewings are blue gray, and the hindwings dark red, with black bands.

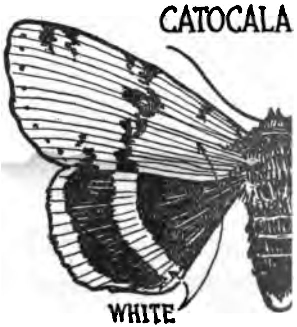
**CATOCALA SOMNUS** (Somnus Underwing).—This species is much smaller than the above, and is at once known from all others of this Genus by having the forewings, head and thorax (middle part of the body) BLACK. The hindwings are as in the preceding.


CATOCALA MARMORATA
BLACK
BLUEGRAY

51


CATOCAL
BL
WHITE

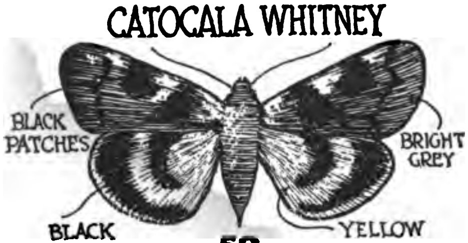
4


CATOCALA
WHITE

5

**ATOCALA CALPHURNIA** (Calphurnia Under-
r).—This species has the forewings greenish, and
rs from all others in having the hindwings BLACK
e base instead of red or yellow, and the wide outer
gin and median band YELLOW instead of black,
l all other species of Catocalae.

**ATOCALA WHITNEYI** (Whitney's Underwing).
is species is well represented by the CUT Fig. 52.—
forewings are bright gray, with a triangular black

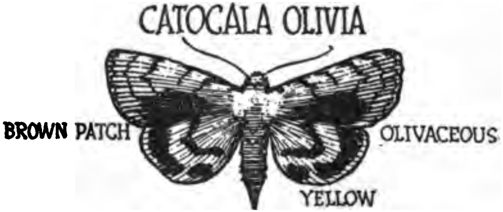


52

h running from the costal margin near the base to
middle of the wing, and beyond this patch is an-
r, as is shown in the CUT.

**ATOCALA CONSTANS** (Constans Underwing).— This species is about the same size as the preceding, but has no dark patches on the forewings. The forewings are pale, smooth, gray, with all lines indistinct, except at the costal margin. It is at once known from all others by having the hindwings BLACK with a yellow spot at the base, and two in the middle.

**CATOCALA OLIVIA** (Olivia Underwing).—See the CUT Fig. 53. This is a rare little species often found in Arizona, but no doubt occurs elsewhere. It is a small



53

species and is known at once by the large oblong brown patch on the inner margin of the forewings, running nearly to the middle of the wing. The hindwings are orange yellow, with the black marginal band broken.

## LESSON VIII.

## USE METHODS OF ATTRACTION TO CAPTURE VALUABLE ONES

You must use every known method of attraction to capture valuable specimens, and to get aberrations you should breed every common species. It is also possible to get hybrids by mating males of one species with females of another, and rear the eggs in the manner I describe in the lesson on rearing. I am always open to purchase any aberrations or hybrids at high prices. Use your spare time, and do not be disappointed if you do not capture many valuable ones at first. Learn how to use the methods of attraction first.

### FOREIGN BUTTERFLIES AND MOTHS

All collectors in Mexico, South and Central America, Philippine Islands, Hawaiian Islands, should send me lists of what they can capture, especially of all showy specimens of Heliconidae, Clothilda, Siderone Megistanis, Prepona, Agrias, Morphidae, Caligo, Narope, Catopsillia, Phula, Papilio, etc., and from Palaearctic I especially desire Parnassius, Ornithoptera, Catopsillia. Of the Indo-Australian species I can use certain Morphidae, Nymphalidae, e
sia, Terinos, liminitis, Euth
Charaxes, Prothoe, Mynes,
Sirocinus, Armandia, Teino
number of the Papilio-Satu
Genus Attacus, Actias and C

**BOOKS FOR FOREIGN**
books are of little value f
United States or Canada.
should inquire at their lib
books on the Butterflies an
locality, and after receivin
write to me the names of th
so that I can inform other c
them. Foreign Collectors s
material on hand before shi
showy species of Morphida
dae, which will be accepte

**COLLECTORS IN ALAS**
collectors all over Alaska, s
living there I would be pl
or you may advise them to

### THE BIG C

Most human beings are n
outdoors. The fields, gree
grass, or purple with clover

sea as the breeze sweeps the timothy in head; the roadside hedges aflutter with birds; the woods, ah, the woodland places have a charm for us all. The squirrels and chipmunks chattering and scampering, birds calling and flitting hither and yon; the sweet perfume of flowers whose delicate blossoms gladden the eye and attract myriads of winged insect life. How we do love the woods and the wild things which make them their home.

The hill and mountain country has a charm all its own. There is a grandeur in the heights which our prairie dwellers cannot know. To one who has stood upon the summit of some cloud-piercing mountain and gazed upon the landscape spread like a giant picture before him, who has felt the inspiration of the heights, there remains no question in his mind why the inspired characters of Scripture history so often sought the mountains.

The writer has never had the pleasure of exploring the famed hill country of New England, but from what he has read and been told it must be an outdoor paradise, with its wooded hills and lakes nestling in the hollows of the high places, its swarming bird and insect life, its flora of color and perfume known only to a land where the grip of ice and snow prevail a part of the year.

Our western mountains lack the verdure and the softer charms of the New England hills, but claim a rugged grandeur of their own. Their snow-fed streams find little along their course but granite rocks, which fret and chafe their waters to remonstrant roar. Of verdure there is little except here and there a mountain meadow. Far in the upper heights we may find now and then a lake, cradeled between snow-clad peaks.

Nature lovers find beauties and inspiration in all this big outdoors. Even the desert, parching during the long summer under a torrid sun, in the cool of the evening takes on a weird and fascinating beauty and when the heat of the summer is past, and one can travel with a degree of comfort, this same desert woos the traveler with charms as compelling in their way as the more hospitable regions of rainfall and growing things.

Of all lovers of nature, the entomologist finds most ready at hand to attract his attention, inspire his study and admiration, and to reward his industry. Wherever we go we find insect life. The more remote and unfrequented the place the more likely are we to find unusual and rare forms of insect life. And yet, in the most frequented places, where insect life is most abundant, there we have the greater opportunity to come upon hybrid forms, unusual and rare developments of common species. Butterflies are one of nature's most beautiful ornaments. They are short-lived, and the ones you see today **MAY NOT BE** the same you see next week. The study of these forms of life afford a constant variety. Nor need one confine his studies to the hours of sunshine. After the sun has set then come the moths, more numerous, and quite as interesting as the butterflies.

The happiest days in the experience of the writer were those he spent wandering over the mountain sides with his net and other equipment, drinking in the beauties of the high places, filling his lungs with the pure, invigorating air, quaffing the clear, cold water of the rushing streams and eating his lunch with the appetite which comes to him who lives close to nature. One tires of these things if he has no occupation, no objective to hold his thoughts. If, however, he is busy, if he has an object in view and is prosecuting it successfully, then the natural beauty of his surroundings rounds out the pleasure of existence and he is living as God intended he should live, working and enjoying his work.

Collecting insects is a shor
in any but a tropical climat
winter. For that reason it
vacation work. Aside from
have time for a little collecti
city dwellers, condemned to
ment house in the crowded
in the smaller towns, or in th
of opportunity for collectin
fields are easily accessible, a
outside the dooryard for bu
they are night flyers.

The writer feels that in hi
lovers to the study of ento
worthy educational work, on
its monetary cost in educati
and old, and beside this the
and cents as a reward for i
value of these instructions
money, and any person of
will study them carefully a
earnest need not be disappoi

## LESSON VII.

## SUPPLIES

Very few supplies are needed in this business, but I ive a list of them that can be used to advantage, alhough not absolutely necessary, except the forceps.

**FORCEPS.**—It is impossible to get along without orceps for picking up the butterflies and moths. Alvays pick a specimen up by a leg or the underside of he body. Forceps can be obtained from dealers, or if ou have difficulty in getting them in your town, I will end you a pair for only 20c, all prepaid, to your adress by return mail.

**FOLDING NETS.**—For convenience in traveling, or arrying through the town, a folding net should be sed. Dealers sell such nets for $1.25 to $2.00 each, ut I have had manufactured a cheap one, with a foldng ring, folding handle and a two-foot bag, all comlete ready for use. I will send you one, all charges repaid, for only 90c.

**CYANIDE OF POTASSIUM.**—It can be obtained from the Central Scientific Co., Chicago, Ill.

**PINS.**—If you desire to form a collection in cork lined cabinets, you will need pins. No. 3 black japanned steel ones are the best for this purpose.

**TRIANGULAR ENVELOPES.**—You can make the envelopes yourself.

**NAPHTALENE FLAKES FOR PRESERVING FROM DESTROYING INSECTS.**—You can get Naphtalene from any druggist or store for only 6c per pound. I do not keep it in stock, so get it from your druggist.

**CABINETS AND EXHIBITION CASES.**—All cabinets or cases for pinned specimens must be lined with cork, and have to be made very carefully, so as to exclude all dust and insects. You can make your cabinets and cases yourself, but as they have to be absolutely dust and insect-proof, it is cheaper to buy them from a dealer. Any kind of an insect cabinet can be purchased from Kny-Scheerer Company, 404 West Twenty-seventh street, New York, N. Y.

**RIKER MOUNTS.**—Riker mounts are cases filled with a cotton and a glass lid. No pins are required with them. The specimens are placed on the cotton, and when the lid is closed the specimens are protected from sudden jar, dust or destroying insects. They are made to hang on the wall or to place in drawers. The best size is 8x12, and only cost 40c net. Central Scientific Co., Chicago, Ill., supply them.

## BIG MONEY CAN BE MADE SELLING MOUNTED BUTTERFLIES AND MOTHS

**CASES OF SPECIMENS.**—I advise each collector to put up cases of all the showy butterflies and moths found in their locality and offer them for sale in their town or city. Hire boys or agents to sell them for you if you object to doing so yourself, or send circulars to all the people in your town telling them about the cases, or advertise them in the paper of your town. I intend to hire agents all over the United States to sell collections for me, but I am too busy at present to do so.

**SHOWY SPECIMENS.**—If you have difficulty in capturing many showy specimens, send to me and I will give you the most beautiful specimens in the United States, from California, Texas, Arizona, Florida, etc., at a rate of only 7c each. This special offer is only for my own collectors, and to all others small quantities will be charged at the rate of 10c per specimen. Put as many specimens in the cases as you think best, and sell them at least from 50c to a $1.00 profit to yourself after paying expenses. You could sell hundreds of such cases in any fair sized town. I will be pleased to help you in this line and supply you with fine specimens in small lots so as to make it easy for you. Make your cases similar to the IL
COVER. You can put some c
to butterflies, and you can use
of butterflies and moths that i
to sell the same customer seve
of butterflies and another of n

**CHEAP CASES.—RIKER I**
cases for this purpose, becaus
and attractive. They are fille
which preserves the specimens
and sudden jars. The top is
cheap, only cost 40c (forty ce
of this case is 8x12, and is ju
cheap case. Central Scientific
ply them.

**DR. W. J. HOLLAND'S C**
**BUTTERFLIES AND MOT**
studied my instructions and ea
the sale of your specimens, I
Holland's Colored Plates and
show and describe nearly all
the United States and Canada
will pay you to get them, and
a good investment, as with the

**tion to learn the names of nearly all the species on my large price list, which shows about (750) seven hundred and fifty different species which I buy. My instructions show only one hundred different species, but they are all valuable except a few very common ones which are very variable or ones which might confuse you, and will be sufficient for you to go ahead with until you have earned enough so that you can purchase the Colored Plates.**

**COLORED PLATES OF BUTTERFLIES AND MOTHS OF THE UNITED STATES AND CANADA, NORTH OF MEXICO, WITH COMPLETE LIFE HISTORY AND ANATOMY.—It is put up in two volumes, one devoted to the butterflies and the other to the moths. Each volume is large in size, being nearly two inches thick, ten inches long and seven inches wide. Considering the valuable information that these volumes contain, I would advise that as soon as you earn the price of them from the sale of specimens to get both volumes at once.**

**One volume is devoted to the butterflies, and contains 370 pages, 48 colored plates in NATURAL COLORS, and over 1,000 butterflies represented. The one devoted to the moths contains 445 pages, 48 colored plates in NATURAL COLORS, 300 CUTS and about 1,500 moths represented. The BUTTERFLY volume costs $3.00 NET, and the MOTH volume costs $4.00 NET. They can be purchased separately if you wish, or both volumes can be bought for $7.00 NET. I keep them on hand for my collectors, and will forward them direct to your address by return mail on receipt of price, or if you send in those species on my price list, correctly named, I will keep the price out of the amount due you for them, but of course only if you advise me to do so.**

**JAMES SINCLAIR,**

**LOS ANGELES, CAL.**

## MEN, WO

## BIG MONEY IN MOUNTIN
## NEST

**MOUNTED BIRDS, EGGS** in any town, or you can ma specimens for others. Taxide often earn from $2,000 to $3, large and there are not enoug the demand. By devoting you you should easily be able to e a month or more.

**WHY PAY** taxidermy ins teach you, when you can ge mount birds, nests and eggs for the cabinet, by purchasi **CAL AND ORNITHOLO HAND BOOK** for only 40c, al direct to your address, promp valuable **BIRDS, EGGS** and **CASH.** I am the author of th thological Collector's Hand that the instructions given i same simple and easy to u the instructions given on th herein. Send only 40c today, and it may mean large profits to you. See the Illustration showing the BOOK.

JAMES SINCLAIR,
LOS ANGELES, CAL.

## SILK CULTURE

The silk industry should give thousands of men and women employment in America. Raw silk is always in demand and the market price is about $5.00 per pound. Eggs of the silk moth only cost on an average of five cents per 100 in the United States. Ten ounces of eggs will produce 200 pounds of silk, and this sold at $5.00 a pound would bring you $1000.00. The best book of instructions on silk culture is "REARING SILK WORMS," by Carrie Williams. It only costs fifty cents prepaid. Address, J. Sinclair, Entomologist, Los Angeles, Cal.

# PRICE LIST OF LEPIDOPTERA

(Butterflies and Moths)

JAMES SINCLAIR

ENTOMOLOGIST

Los Angeles, California

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The prices quoted for the species on this price list are for perfect specimens, properly prepared, and packed in the proper way in "**wooden boxes**". I can use, as soon as possible, twenty males and twenty females of each one on the list immediately below. It is not necessary to send in both males and females at the same time, but always do so when possible. After I receive a shipment, more will be ordered if required. I have several thousand dollars to invest in the specimens on this list. Read carefully the important rules in my instructions on preparing, packing for shipment, shipping, etc., before sending a single specimen, for I will not be responsible for material not prepared, packed or shipped in the proper way, or for material not ordered on this list; so absolutely send no samples or any not listed, as I will not accept or examine them. Prices and quantities subject to change without notice.

## BUTTERFLIES

### ARGYNNIS (Fritillaries)

| | | Male | Female |
|---|---|---|---|
| **Argynnis** | **diana** | $ .05 | $ .20 |
| " | **nokomis** | .50 | .75 |
| " | nitocris | .30 | .40 |
| " | **caerulescens** | .30 | .40 |
| " | nigrocaerules | .30 | .40 |
| " | leto | .05 | .05 |
| " | charlottii | .10 | .15 |
| " | carpenterii | .. | .05 |
| " | **nausica** | .05 | .15 |
| " | **electa** | .. | .05 |
| " | cornelia | .10 | .10 |
| " | **oweni** | .05 | .15 |
| " | hesperis | .05 | .05 |
| " | hippolyta | .10 | .15 |
| " | bremnerii | .05 | .10 |
| " | rhodope | .05 | .10 |
| " | behrensii | .05 | .10 |
| " | halcyone | .05 | .05 |
| " | chitone | .05 | .10 |
| " | snyderi | .10 | .15 |

| | | Male | Female |
|---|---|---|---|
| " | adiaste | .05 | .10 |
| " | artonis | .05 | .10 |
| " | bischoffi | .05 | .10 |
| " | pales | .05 | .10 |
| " | alaskensis | .50 | .50 |
| " | montinis | .10 | .20 |
| " | charicala | .05 | .10 |
| " | arctica | .20 | .. |
| " | polaris | .05 | .10 |
| " | frigga | .05 | .15 |
| " | kreimhild | .25 | .25 |
| " | alberta | 1.00 | 1.50 |
| " | astarte | 1.00 | .. |

### MELITAEA (Checker Spots)

| | | Male | Female |
|---|---|---|---|
| Melitaea | colon | .05 | .10 |
| " | beani | .05 | .05 |
| " | maria | .05 | .10 |
| " | whellerii | .. | .05 |
| " | capella | .. | .05 |
| " | quino | .05 | .05 |
| " | rubrescens | .10 | .. |
| " | rubricunda | .. | .05 |
| " | taylori | .. | .05 |
| " | edetha | .. | .05 |
| " | sterope | .10 | .. |
| " | acastus | .05 | .10 |
| " | neumoegenii | .10 | .. |
| " | obsoleta | .05 | .10 |
| " | alma | .05 | .10 |
| " | theona | .05 | .05 |
| " | thekla | .05 | .10 |
| " | cyneas | .05 | .05 |

### GRAPTA (The Angle Wings)

| | | Male | Female |
|---|---|---|---|
| Grapta | hylas | .10 | .. |
| " | rusticus | .05 | .10 |
| " | silenus | .05 | .05 |
| " | oreas | .05 | .10 |

### VANESSA (The Tortois Shells)

| | | Male | Female |
|---|---|---|---|
| Vanessa | obscura | .15 | .15 |
| " | hygiaea | 1.00 | 1.00 |
| " | subpallida | .10 | .15 |

### VICTORINA (The Malachites)

| | | Male | Female |
|---|---|---|---|
| Victorina | steneles | .05 | .05 |

### TIMETES (The Dagger-wings)

| | | Male | Female |
|---|---|---|---|
| Timetes | coresia | .05 | .10 |
| " | petreus | .. | .05 |
| " | eleuchea | .. | .05 |

### AGERONIA (The Calicoes)

| | | Male | Female |
|---|---|---|---|
| Ageronia | fornax | .10 | .15 |
| " | feronoa | .. | .05 |
| Diadema | misippus | .05 | .15 |

| | Male | Female |
|---|---|---|
| **BASILARCHIA (White Admirals)** | | |
| Basilarchia arizonensis ........... | .05 | .10 |
| " cerulea ...... ........ | .10 | .15 |
| " lamina ............... | | |
| " proserpina ......... .. | | |
| " sinefascia ............ | .20 | .. |
| " floridensis ............ | .05 | .15 |
| " obsoleta ............. | .10 | .15 |
| " eavesi ............... | | .. |
| **CHLORIPPE (Hackberry Butterflies)** | | |
| Chlorippe antonia ............... | | |
| " montis ................ | | |
| " leilia ................. | | |
| " alicia ................. | .05 | .10 |
| " nig .................. | .15 | .. |
| " flora ................. | | |
| " cocles ................ | .10 | .15 |
| **PYRRHANAEA (Leaf-wings)** | | |
| Pyrrhanaea morrisonii ............ | .05 | .05 |
| " portia ............... | .05 | .10 |
| **DEBIS (The Eyed Nymphs)** | | |
| Debis creola ..................... | .05 | .05 |
| **NEONYMPHA (The Spangled Nymphs)** | | |
| Neonympha mitchelli ............ | .10 | .15 |
| Coenonympha pulla ............... | .05 | .05 |
| " kodiak ............ | .10 | .10 |
| " haydeni ............ | .10 | .10 |
| **EREBIA (The Alpines)** | | |
| Erebia fasciata .................. | .20 | .20 |
| " discoidalis ............... | .05 | .10 |
| " disa .................... | .10 | .15 |
| " mancinus ............... | .50 | .. |
| " brucei ................. | .05 | .10 |
| " sofia ..................... | 1.00 | 1.00 |
| " alaskensis ............... | 2.00 | 2.00 |
| " magdalena .............. | .25 | .75 |
| **SATYRUS (Wood Nymphs)** | | |
| Satyrus pegala .................. | .10 | .20 |
| " ariane .................. | .05 | .05 |
| " incana .................. | .05 | .10 |
| " wheeleri ................ | .05 | .. |
| " gabbii ................. | .05 | .10 |
| **OENEIS (The Arctics)** | | |
| Oeneis macounii .................. | .15 | .50 |
| " iduna .................... | .10 | .15 |
| " norna .................... | .50 | .. |

| | Male | Female |
|---|---|---|
| “ tarpeia | 1.50 | 1.50 |
| “ taygete | .05 | .10 |
| “ katahdin | .05 | .05 |
| “ alaskensis | 2.00 | 2.00 |
| “ oeno | .25 | .. |
| “ subhyalina | .25 | .. |
| “ crambis | .25 | .. |
| “ brucei | .05 | .10 |
| “ beanii | .25 | 1.00 |
| Calephelis nemesis | .05 | .05 |

## THECLA (Hair-streaks)

| | | |
|---|---|---|
| Thecla grunus | .05 | .05 |
| “ crysalus | .05 | .05 |
| “ citima | .05 | .05 |
| “ telea | .05 | .10 |
| “ martialis | 05 | .. |
| “ jada | .25 | .50 |
| “ favonius | .05 | .05 |
| “ wittfeldii | .05 | .05 |
| “ itys | .05 | .05 |
| “ auretorum | .05 | .05 |
| “ dryope | .05 | .05 |
| “ putnami | .05 | .10 |
| “ spadix | .05 | .05 |
| “ tetra | .10 | .15 |
| “ chalcis | .10 | .. |
| “ nelsoni | .. | .05 |
| “ exoleta | .10 | .. |
| “ tacita | .10 | .. |
| “ spinetorum | .10 | .15 |
| “ castalis | .10 | .. |
| “ acis | .05 | .10 |
| “ cyltie | .05 | .10 |
| “ leda | .05 | .10 |
| “ ines | .05 | .10 |

## CHRYSOPHANUS (The Coppers)

| | | |
|---|---|---|
| Chrysophanus hermes | .05 | .05 |
| “ fasciata | .20 | .25 |
| “ feildeni | .20 | .25 |
| “ fulliolus | .15 | .20 |
| “ cupruus | .05 | .10 |
| “ snowi | .05 | .05 |

## LYCAENA (The Blues)

| | | |
|---|---|---|
| Lycaena clara | .05 | .05 |
| “ chlorina | .10 | .20 |
| “ fulla | .05 | .05 |
| “ maricopa | .. | .05 |
| “ amica | .10 | .15 |
| “ pembina | .15 | .15 |
| “ ardea | .05 | .10 |
| “ kodiak | .20 | .50 |

| | | Male | Femal |
|---|---|---|---|
| " | xerces | .05 | .10 |
| " | mertila | .05 | .05 |
| " | orcus | .05 | .10 |
| " | oro | .05 | .10 |
| " | speciosa | .10 | .50 |
| " | sonorensis | .05 | .05 |
| " | yukona | .50 | .. |
| " | shasta | .05 | .05 |
| " | neurona | .25 | .50 |
| " | aster | .25 | .. |
| " | annetta | .05 | .05 |
| " | nigra | .10 | .20 |
| " | cinerea | .25 | 1.00 |
| " | gozora | .05 | .10 |
| " | intermedia | .05 | .15 |
| " | monica | .10 | .15 |
| " | gyas | .10 | .15 |

### PIERIS (The Whites)

| | | | |
|---|---|---|---|
| Pieris | amaryllis | .10 | .15 |
| " | napi | .. | |
| " | bryoniae | .. | .05 |
| " | hulda | .10 | .15 |
| " | flava | .10 | .15 |
| " | borealis | .05 | .10 |
| " | frigidaria | .05 | .10 |
| " | marginalis | .10 | .10 |
| " | novangliae | .05 | .05 |
| " | ochsenheimeri | .10 | .15 |

### ANTHOCHARIS (Orange-tips)

| | | | |
|---|---|---|---|
| Anthocharis | lotta | .05 | .10 |
| " | cethura | .. | .05 |
| " | morrisonii | .05 | .10 |
| " | pima | .10 | .15 |
| Catopsila | philaea | .05 | .05 |
| " | maxima | .05 | .10 |
| Colias | eurydice | .. | .05 |
| " | elis | .15 | .20 |
| " | hecla | 1.00 | 1.00 |
| " | glacialis | 1.00 | 1.00 |
| " | autumnalis | .05 | .05 |
| " | nigra | .50 | - |
| " | virida | | .50 |
| " | barbara | .05 | .10 |
| " | astraea | .05 | .10 |
| " | pelidne | .20 | .30 |
| " | skinneri | .30 | .. |
| " | gigantea | .30 | 1.00 |
| " | palaeno | .10 | .20 |
| " | chippewa | .10 | .20 |
| " | werdandi | .10 | .20 |

| | Male | Female |
|---|---|---|
| " rossii | .10 | .20 |
| " behrii | .05 | .10 |
| Terias flava | | |
| " boisduvaliana | .05 | .10 |
| " westwoodi | .05 | .05 |
| " linda | .05 | .05 |
| Parnassius menetriesii | .10 | .15 |
| " altaurus | .10 | .15 |
| " behrii | .05 | .10 |
| " hemodur | .05 | .05 |
| " nanus | .05 | .05 |
| " sedakovii | .50 | .75 |
| " nomion | 1.00 | 1.00 |
| " minor | 1.00 | 1.00 |
| Papilio abbottii | .. | .05 |
| " sinon | .10 | .15 |
| " Machaon (V. alaiska) | 3.00 | 5.00 |
| " pergamus | 3.00 | 7.00 |
| " brevecauda | | — |
| " hollandi | 2.00 | .. |
| " bairdi | | |
| " indra | | |
| " oregonia | | |
| " nitra | 100 | 1.00 |
| " texanus | .20 | .20 |
| " australis | .10 | .20 |
| " arizonensis | .05 | .10 |
| " ammoni | .05 | .10 |
| " pilumnus | .10 | .30 |
| " thoas | .05 | .10 |
| " bonhotei | .20 | .30 |
| " mylotes | .10 | .10 |

# MOTHS

## FAMILY SPINGIDAE (Hawk-moths)

| | Male | Female |
|---|---|---|
| Haemorrhagia thetis | .. | .05 |
| " rubens | .. | .05 |
| " senta | .50 | .20 |
| " cynoglossum | .30 | .30 |
| " axillaris | .. | .05 |
| " brucei | .05 | .10 |
| " gracilis | .05 | .10 |
| Euproserpinus phaeton | 2.00 | 2.00 |
| " euterpe | 5.00 | 5.00 |
| Proserpinus flavossiata | .25 | .50 |
| " clareiea | .05 | .05 |
| Pogocolon gaurae | .25 | .25 |
| " juanita | .25 | .30 |
| Hemeroplanes parce | .10 | .15 |
| Pholus labruscae | .10 | .10 |
| " vitis | .05 | .05 |

| | Male | Female |
|---|---|---|
| **Cocytius antaeus** | .10 | .15 |
| **Erinnyis lassauxi** | .05 | .10 |
| " **merianae** | .05 | .05 |
| " **oenotrus** | .10 | .10 |
| " **melancholica** | .10 | .10 |
| " **caicus** | .30 | .50 |
| " **crameri** | .10 | .15 |
| **Protoparce rustica** | .05 | .05 |
| **Hyloicus utahensis** | .05 | .05 |
| " **perelegans** | .05 | .10 |
| " **una** | .05 | .05 |
| " **vancouverensis** | .05 | .05 |
| " **albescens** | .05 | .05 |
| " **libocedrus** | 1.00 | 1.00 |
| " **pinastri** | .10 | .20 |
| " **sequoiae** | .10 | .15 |
| " **dollii** | 1.00 | 1.00 |
| " **coloradus** | .10 | .20 |
| " **canadensis** | 1.00 | 1.00 |
| " **separatus** | 1.00 | 1.00 |
| " Lugens | 1.00 | 1.00 |
| Isopparse cupressi | 2.00 | 2.00 |
| Chlaenogramma jasminearum | .10 | .15 |
| Isogramma hageni | .50 | .50 |
| Lapara coniferarum | .10 | .10 |
| " bombycoides | .05 | .10 |
| " pineum | 1.00 | 1.00 |
| Pachyspinx occidentalis | .05 | .10 |
| Sphinx astarte | .50 | 1.00 |
| " ophthalmicus | .05 | .05 |
| " pallidulus | .10 | .10 |
| Calasymbolus astylus | .10 | .15 |
| Arctonotus lucidus | - | 1.00 |
| **SATURNIDAE (Silk-moths)** | | |
| Callosamia calleta | .10 | 15 |
| Agapema galbina | .10 | .10 |
| Saturnia mendocino | 1.00 | |
| Automeris pamina | .05 | .05 |
| " aurosea | .10 | .15 |
| " zephyria | .50 | .50 |
| Coloradia pandora | .05 | .05 |
| Syssphinx albolineata | .30 | .30 |
| " heiligbrodti | .25 | .25 |
| Citheronia sepulcralis | .10 | .10 |
| Hemileucidae electra | .20 | .30 |
| " **navadensis** | .05 | .10 |
| " **californica** | .05 | .10 |
| " **juno** | .50 | 1.00 |
| " **neumoegnii** | .50 | 1.00 |
| " **tricolor** | .50 | 1.00 |

## ARCTIIDAE (Tiger-moths)

| | Male | Female |
|---|---|---|
| Hyphoraia parthenos | 1.00 | 1.00 |
| “ borealis | 1.00 | 1.00 |
| Apantesis anna | | |
| “ quenseli | .10 | .10 |
| “ williamsii | .05 | .10 |
| “ determinata | .10 | .. |
| “ excelsa | 1.00 | 1.00 |
| “ lugubris | 1.00 | 1.00 |
| “ favorita | 1.00 | 1.00 |
| Kodiosoma fulva | .15 | .. |
| “ nigra | .15 | .. |
| “ eavesii | .15 | .. |
| “ tricolor | .20 | .. |
| Euverna clio | .20 | .20 |
| Arctia caia | | |
| “ wiskotti | .25 | .25 |
| Arachnis maia | .05 | .05 |
| “ citra | .05 | .10 |
| “ hampsoni | .05 | .05 |
| “ zuni | .25 | .25 |
| Eurythra phasma | .10 | .10 |
| Pygarctia abdomanalis | .10 | .10 |
| Hypocrisias minima | .10 | .10 |
| Halisidota longa | .10 | .15 |
| Eupseudosoma involutum | .05 | .05 |
| Bertholdia trigona | .05 | .05 |

## AGARISTIDAE

| | Male | Female |
|---|---|---|
| Alypia conjuncta | .05 | .05 |
| “ disparata | .05 | .10 |
| “ gracilenta | .05 | .10 |
| “ brannani | .20 | .20 |

## CATOCALAE (Underwings)

| | Male | Female |
|---|---|---|
| Catocala marmorata | 1.00 | 1.00 |
| “ dejecta | .25 | .50 |
| “ lacrymosa | .10 | .15 |
| “ paulina | .25 | .50 |
| “ evelina | .25 | .30 |
| “ sapho | 1.00 | 1.00 |
| “ aholah | .05 | .05 |
| “ isabella | .05 | .05 |
| “ chelidonia | .05 | .10 |
| “ amasia | .05 | .10 |
| “ virens | .05 | .15 |
| “ sancta | .10 | .15 |
| “ dulcoila | .20 | .25 |
| “ mira | .10 | .10 |
| “ whitneyi | .10 | .15 |
| “ amestris | .10 | .10 |
| “ westcottii | .10 | .20 |
| “ frederici | .50 | .50 |
| “ desdemona | .10 | .15 |

| | Male | Female |
|---|---|---|
| " calphurnia | .20 | .25 |
| " votiva | .30 | .30 |
| " violenta | .10 | .15 |
| " chiricahua | .10 | .20 |
| " herodias | 1.00 | 1.00 |
| " pura | 1.00 | 1.00 |
| " purissima | 1.00 | 1.00 |
| " perdita | .05 | .10 |
| " faustina | .05 | .05 |
| " zillah | .05 | .10 |
| " verecunda | .05 | .10 |
| " allusa | .10 | .15 |
| " carlota | .10 | .15 |
| " virgilia | .15 | .20 |
| " valeria | .15 | .15 |
| " volumnia | .10 | .. |
| " stretchii | .05 | .05 |
| " portia | .10 | .10 |
| " aspasia | .10 | .20 |
| " augusta | .10 | .10 |
| " sierrae | .10 | .10 |
| " arizonae | .10 | .15 |
| " babayaga | .10 | .15 |
| " electilis | .05 | .10 |
| " hillii | .05 | .10 |
| " somnus | .05 | .10 |
| " phyrnia | .05 | .10 |
| " bianca | .05 | .10 |
| " elda | 1.00 | 1.00 |

### COSSIDAE (Goat Moths)

| | | |
|---|---|---|
| Cossus centerensis | 3.00 | 1.00 |
| " undosus | .10 | .15 |
| " perplexus | 1.00 | 1.00 |
| " mucidus | 1.00 | 1.00 |
| Prinonoxystus macmurtrei | .25 | .25 |
| Inguromorpha basalis | 1.00 | 1.00 |
| Cossula magnifica | 1.00 | 1.00 |
| Hypopta bertholdi | .25 | .25 |
| " henrici | .25 | .25 |

### SESIIDAE (Aegeriidae)

| | | |
|---|---|---|
| Melittia gloriosa | 3.00 | 3.00 |
| " grandis | 1.00 | 1.50 |
| " snowii | .20 | .30 |

### LAS IOCAMPIDAE

| | | |
|---|---|---|
| Gloveria dolores | .20 | .20 |
| " arizonensis | .05 | .05 |

## HEPIALIDAE

| | Male | Female |
|---|---|---|
| Sthenopsis quadriguttatus | .15 | .15 |
| " thule | .15 | .15 |
| " auratus | 1.00 | 1.00 |
| " los | .25 | .25 |
| " perdita | .20 | .20 |
| Hepialus hyperboreus | .10 | .10 |
| " mathewi | .10 | .10 |
| " confusus | 1.00 | 1.00 |
| " lemberti | .50 | .50 |
| " sequoiolus | .50 | .50 |

## ADDITIONAL LIST

For all specimens mentioned below I will pay a flat rate of five cents each, if prepared scientifically, as per instructions, and packed in wooden boxes, etc. I can use five males and five females as soon as possible. Send both sexes at the same time, if possible, but it is not absolutely necessary. Prices and quantities subject to change without notice. References marked * preceding the name means that I want females of them only.

*Argynnis zerene
*Argynnis platina
*Argynnis coronis
*Argynnis calippe
*Argynnis navadensis
Argynnis meadii
Argynnis clio
*Argynnis arge
*Argynnis eurynome
Argynnis erinna
Argynnis cunninghami
Argynnis montivaga
Argynnis triclaris
*Argynnis helena
Argynnis boisduvalii
*Meliteea cooperi
*Meliteea anica
*Meliteea brucei
*Meliteea nubigena
Meliteea baroni
*Meliteea rubricunda
*Meliteea taylori
Meliteea helvia
*Meliteea hoffmani
Meliteea helcita
*Meliteea gabii
*Meliteea harrisii
*Meliteea elada
*Meliteea dymas
Oeneis alberta
*Oeneis juta
*Oeneis semidea
Lemonias duryi
Lemonias palmerii
Lemonias zela
Lemonias ares
Lemonias cleis
*Calephelis borealis
*Calephelis australis
Caris meliserta
*Eumaeus atala
Eumaeus minyas
Thecla alcestis
*Thecla pudica
*Thecla acadica
Thecla acygnus
Thecla lorata
Thecla Ontario
Thecla liparops
*Thecla saepium
Thecla fulvescens
Thecla adenostomatis
*Thecla blenina
Thecla columella
Thecla fotis
Thecla affinis
*Thecla apama
Thecla sheridanii

*Meliteea chara
Meliteea fulvia
*Meliteea wrightii
Meliteea bollii
Meliteea definita
*Meliteea minuta
Meliteea arachne
Meliteea nympha
Phyciodes drusius
*Phyciodes vesta
Phyciodes boucardii
*Phyciodes mata
*Phyciodes emissa
*Phyciodes barnest
Eresis tulcis
Eurema lethe
Callicore clymena
Myscelia skinneri
*Coononympha brenda
Satyrus maritima
*Satyrus baroni
*Satyrus Paulus
Satyrus oetus
Satyrus sthenele
Oeneis navadensis
Oeneis gigas
Oeneis californica

Thecla laeta
Chrysophanus arota
*Chrysophanus mariposa
*Lycaena heteronia
Lycaena clara
Lycaena maricopa
Lycaena phileros
Lycaena antiacis
*Lycaena sagittigera
Lycaena aquilo
Lycaena herrii
Leptalis melite
Pieris phileta
Pieris beckerii
Pieris nelsoni
Pieris manni
Pieris novangliae
Pieris ochsenheimeri
Kricogonia terisse
Kricogonia fantasia
*Kricogonia unicolor
*Terias gundlachia
Terias damaris
Terias alba
Terias gnatheme
Terias blakei
*Kricogonia lanice

## MOTHS

### Spingidae (Hawk-moths)

*Aellepos tantalus
*Aellepos ixion
*Aellepos fadus
Calliomma pluto
Theretra porcus
Erinnyis domingonis
Erinnyis festa

Erinnyis edwardsii
*Ampelophaga cnotus
Ampelophaga versicolor
Pseudosphinx tetiro
Cautethia grotei
Hyloicus una
*Hyloicus oreodaphne

### Syntemidae Family

*Cosmosomo auge
Cosmosomo omphale
Syntomedia ipomeae
Syntomedia euterpe
Syntomedia epilais
Pseudomya minima
Didasys belae
Horama texana
Eucereon confine
Eucereon carolina

Scepsis packardii
Scepsis matthemi
Scepsis wrightii
Scepsis gravis
Lycomorpha pulchara
Lycomorpha fulgens
Lycomorpha desertus
Ctenucha sanguinaria
Ctenucha lutea
Cteucha rubroscapus